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* V.E.M. PART NO. 92L0107-020D

RELEASED 7-8-71

620 MEMORY TEST

A large grid of black stars on a white background, arranged in approximately 20 horizontal rows and 20 vertical columns. The stars are evenly spaced and form a continuous pattern across the entire page.

THIS TEST PROGRAM IS A PART OF THE MAINTAIN II
TEST PROGRAM SYSTEM

THE MEMC TEST IS DESIGNED TO ASCERTAIN THE OPERATIONAL STATUS OF THE COMPUTER MEMORY. ANY MEMORY SIZE (4K-32K,16 OR 18 BIT) CAN BE CHECKED. READ-ONLY-MEMORY (RCM) IS NOT TESTED BY THIS PROGRAM.

CCCC3400043
CCCC3500044
CCCC3600045
CCCC3700046
CCCC3800047
CCCC3900048
CCCC4000049
CCCC4100050
CCCC4200051
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CCCC4500054
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CCCC6500075
CCCC6600076

CCCC6700077

CCCC6800078
CCCC6900079
CCCC7000080
CCCC7100081
CCCC7200082

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000027		* .CRG ,027	CCC7300083	
000027	001000	* .JMP .EBG2 BEGINNING OF TEST EXEC	CCC7400084	
000030	002146 R		CCC7500085	

* INPUT PARAMETERS (TTY MODE) *				

000044		* .CRG ,044	CCC7600086	
000044	100445	MTTM .EXC ,0400+PRTY	ENABLE PARITY INTERRUPTS	CCC7700087
000045	006030	* .LEXI .HDG1	'MEMORY TEST'	CCC7800088
000046	001416 R		CCC7900089	
000047	002000	* .CALL .OUTD	CCC8000090	
000050	003123 R		CCC8100091	
000051	006030	MTT5 .LEXI .HDG6	CYCLES =	CCC8200092
000052	001463 R	* .CALL .OUTD	CCC8300093	
000053	002000	* .CALL .INPG	INPUT CYCLES	CCC8400094
000054	003123 R	* .CALL .INPG	CCC8500095	
000055	002000	* .JMP .MTTM	SS3 TERMINATE	CCC8600096
000056	002771 R	* .JMP .MTT5	BACKSLASH	CCC8700097
000057	001000	* .JMP .MTT6	COMMA (PRINT 'END MEMC')	CCC8800098
000060	000044 R	* .STA .CYCL	SAVE CYCLES	CCC8900099
000061	001000	* .TZA ,		CCC9000100
000062	000051 R	* .STA .EMEM	SET FLAG TO SUPPRESS END MEMO	CCC9100101
000063	001000	* .JMP .MINT	BRANCH TO TEST INITIALIZATION	CCC9200102
000064	000072 R	* .STA .CYCL	SAVE CYCLES	CCC9300103
000065	051377	* .TZA ,		CCC9400104
000066	005001	* .CPA ,		CCC9500105
000067	051400	* .STA .EMEM	SET FLAG TO PRINT END MEMC	CCC9600106
000070	001000	* .JMP .MINT		CCC9700107
000071	000177 R	* .STA .CYCL		CCC9800108
000072	051377	* .TZA ,		CCC9900109
000073	005001	* .CPA ,		CC10000110
000074	005211	* .STA .EMEM	INSTRUCTION PARITY ERROR	CC10100111
000075	051400	* .JMP .MINT		CC10200112
000076	001000			
000077	000177 R			

000100		* .CRG ,0100		
000100	000000	* .ENTR ,0		
000101	001000	* .JMP .IPER		
000102	003236 R	* .CRG ,0104		

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000104	000000	.ENTR	,0	ADDRESS PARITY ERRCR	CC1C300113
000105	001000	.JMP	,APER		CC1C400114
000106	003275 R	.CRG	,0110		CC1C500115
000110	000000	.ENTR	,0	OPERAND PARITY ERRCR	CC1C600116
000111	001000	.JMP	,CPER		CC1C700117
000112	003334 R	.CRG	,0114		CC1C800118
000114	000000	.ENTR	,0	TRAP PARITY ERROR	CC1C900119
000115	001000	.JMP	,TPER		CC11000120
000116	003373 R	*			CC111C0121
		*****			CC11200122
		*	INPUT PARAMETERS (CONSOLE MODE)	*	CC11300123
		*****			CC11400124
000117	100445	MTCM	,EXC ,0400+PRTY	ENABLE PARITY INTERRUPTS	CC11500125
000120	005103	.INCR	,03	INPUT CYCLES	CC11600126
000121	004541	.LLSR	,1		CC11700127
000122	005021	.TBA	,	A=10---0	CC11800128
000123	001000	.JMP	,MTC1+1		CC11900129
000124	000126 R	MTC1	,TZA		CC12000130
000125	005001		,037	INPUT PARAMETERS	CC12100131
000126	000037	.HLT			CC12200132
000127	001004	.JAN	,MTC4	INPUT CYCLES? YES.GOTO MTC4	CC12300133
000130	000133 R				CC12400134
000131	001000	.JMP	,MTCM		CC12500135
000132	000117 R				CC12600136
000133	006150	MTC4	,ANAI ,077777	STORE CYCLES	CC12700137
000134	077777				CC12800138
000135	051377	.STA	,CYCL		CC12900139
000136	001000	.JMP	,MINT		CC13000140
000137	000177 R	*			CC13100141
		*			CC13200142
		*	GET NEXT ITEM FROM TABLE *		CC13300143
		*			CC13400144
		*	CALL UACA,TBLPTR,ENDEXIT (A)=((TBL+1+())(TBLPTR))		CC13500145
		*	TBL=INDEX,TBLSIZE,ITEM1,...,ITEMN		CC13600146

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000140	030170	UACB	*LDX	*UACA	(B)=TBLPTR	CC13700147
000141	025000		*LDB	*0,1		CC13800148
000142	046000		*INR	*0,2	INCR ()TBLPTR	CC13900149
000143	016001		*LDA	*1,2	IF ()TBLPTR >T. ()(TBLPTR+1)*GOTO ENDEXIT	CC14000150
000144	146000		*SUB	*0,2		CC14100151
000145	001004		*JAN	*UACC		CC14200152
000146	000161 R					
000147	005121		*INCR	*0,1	(A)=() (TBLPTR+1+()TBLPTR)	CC14300153
000150	126000		*ADD	*0,2		CC14400154
000151	005012		*TAB	*		CC14500155
000152	016000		*LDA	*0,2		CC14600156
000153	020175		*LDB	*UACD	RESTORE B,X	CC14700157
000154	030176		*LDX	*UACD+1		CC14800158
000155	040170		*INR	*UACA	EXIT (RETURN+2)	CC14900159
000156	040170		*INR	*UACA		CC15000160
000157	001000		*JMP	*(*UACA)*		CC15100161
000160	100170 R					
000161	016001	UACC	*LDA	*1,2	(A)=TBLSIZE	CC15200162
000162	035001		*LDX	*1,1	SETEXIT	CC15300163
000163	070167		*STX	*UACA-1		CC15400164
000164	020175		*LDB	*UACD	RESTORE B,X	CC15500165
000165	030176		*LDX	*UACD+1		CC15600166
000166	001000		*JMP	*0	EXIT (RETURN+1)* =GOTO ENDEXIT	CC15700167
000167	000000					
000170	000000	UACA	*ENTR	*	ENTRY POINT	CC15800168
000171	060175		*STB	*UACD	SAVE B,X	CC15900169
000172	070176		*STX	*UACD+1		CC16000170
000173	001000		*JMP	*UACB	CONTINUE	CC16100171
000174	000140 R					
000175		UACD	*ESS	*2	(B), (X)	CC16200172
			*			CC16300173
			*****			CC16400174
			* SUBTEST DRIVER, AND CYCLS COUNTER			CC16500175
			*****			CC16600176
000177	005001	MINT	*TZA	*		CC16700177
000200	051412		*STA	*TERR	INIT ERROR CTR	CC16800178
000201	051413		*STA	*SWCH	SET TO PRINT ERROR TABLE HEADING	CC16900179
000202	051376		*STA	*TCYC	TOTAL CYCLES EXECUTED = 0	CC17000180
000203	007400	MIN1	*RCF	,	RESET ERROR INDICATOR	CC17100181
000204	002000		*CALL	*TUAT	UNIQUE ADDRS	CC17200182
000205	000654 R		*TZA	*	INIT TBL	CC17300183

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000207	051565		STA	•TBL		CC1/400164
000210	002000	MIN2	•CALL	•UACA, TBL, MIN3 GET FRST ADDRS		CC17500185
000211	000170 R					
000212	001565 R					
000213	000234 R					
000214	051405		STA	•FRST		CC17600186
000215	002000		•CALL	•UACA, TBL, MIN3 GET LAST ADDRS		CC17700187
000216	000170 R					
000217	001565 R					
000220	000234 R					
000221	051406		STA	•LAST		CC17800188
000222	002000		•CALL	•TAZT	ALL ZEROS	CC17900189
000223	000771 R		•CALL	•TACT	ALL ONES	CC18000190
000224	002000		•CALL	•TCBT	CHECKERBOARD	CC18100191
000225	001016 R		•CALL	•TWCT	WORST CASE	CC18200192
000226	002000		•CALL	•MIN2	CONTINUE TO NEXT CASE	CC18300193
000227	001044 R		•CALL	•DEM	DISPLAY 'END MEMO'	CC18400194
000230	002000		•CALL	•DEM		
000231	001200 R		•JMP	•MIN2		
000232	001000		•JMP	•MIN2		
000233	000210 R		•JMP	•MIN2		
000234	002000	MIN3	•CALL	•DEM	DISPLAY 'END MEMO'	CC18400194
000235	000247 R		•CALL	•DEM		
000236	011377		•LDA	•CYCLE	CONTINUES ?	CC18500195
000237	001010		•JAZ	•MIN1	YES, GOTO MIN1	CC18600196
000240	000203 R		•JAZ	•MIN1		
000241	005311		•DAR	•	NO, DONE ?	CC18700197
000242	051377		•STA	•CYCL		CC18800198
000243	001010		•JAZ	•TERM	YES, GOTO TERM	CC18900199
000244	000265 R		•JAZ	•TERM		
000245	001000		•JMP	•MIN1	NO, CONTINUE TO MIN1	CC19000200
000246	000203 R		•JMP	•MIN1		
000247	000000	DEM	•ENTR	•0	DISPLAY END MEMO	CC19100201
000250	041376		•INR	•TCYC	TCYC = TCYC+1	CC19200202
000251	013225		•LDA	•SCCN	CONSOLE MODE? YES, RETURN	CC19300203
000252	001010		•JAZ	•(DEM)*		CC19400204
000253	100247 R		•LDA	•EMEM	SUPPRESS MESSAGE ? YES, RETURN	CC19500205
000254	011400		•JAZ	•(DEM)*		CC19600206
000255	001010		•LDXI	•HDG8	'END MEMO'	CC19700207
000256	100247 R		•LDXI	•HDG8		
000257	006030		•LDXI	•HDG8		
000260	001472 R		•LDXI	•HDG8		

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000261	002000	•CALL	•OUTD	CC19800208		
000262	003123 R	•JMP	•(DEM)*	RETURN	CC19900209	
000263	001000					
000264	100247 R					
***** * *****						
* TERMINATE TESTS *						
***** * *****						
000265	013225	TERM	•LDA	•SCON	TERMINATE TEST, REPORT TOTALS	
000266	001010		•JAZ	•TERN	MODE = CONSOLE ? YES, GO TO TERM	
000267	000314 R					
000270	006030		•LDXI	•HDG9	*ERROR TOTAL = •TERR	
000271	001500 R				CC20500215	
000272	002000		•CALL	•OUTD	CC20600216	
000273	003123 R		•LDA	•TERR	CC20700217	
000274	011412		•CALL	•OUTE	CC20800218	
000275	002000		•CALL	•OUTD	CC20900219	
000276	003077 R		•LDXI	•HG11	'NO. CYCLES RUN ='	
000277	002000		•CALL	•OUTD	CC21000220	
000300	003123 R		•LDA	•TCYC	TOTAL CYCLES EXECUTED	
000301	006030		•CALL	•OUTD	CC21200222	
000302	001533 R		•LDA	•OUTE	CC21300223	
000303	002000		•CALL	•OUTD	CC21400224	
000304	003123 R		•CALL	•OUTC	CR/LF	
000305	011376		•LDXI	•TERR	CONTINUE	
000306	002000		•CALL	•MTOP	CC21500225	
000307	003077 R		•JMP	•MTOP	A = TOTAL ERRORS	
000310	002000		TERN	•LDA	B = NO. CYCLES	
000311	003070 R			•LDB	X = CURRENT (OR LAST) TEST	
000312	001000			•LDX	DISPLAY TOTALS	
000313	000017 R			•SHLT	CONTINUE	
000314	011412			•JMP	CC21600226	
000315	021376			•LDA	CC21700227	
000316	031401			•LDB	CC21800228	
000317	000777			•TEST	CC21900229	
000320	001000			•SHLT	CONTINUE	
000321	000017 R			•JMP	CC22000230	
***** * *****						
* ERROR REPORTING ROUTINE *						
***** * *****						
000322	000000	MERR	•ENTR	•0	CC22100231	
000323	007401		•SCF	•	CC22200232	
000324	041412		•INR	•TERR	INCR ERR CTR	CC22300233
					CC22400234	
					CC22500235	
					CC22600236	

000325	061414		•STB	•SAVB	SAVE B (#TEST CYCLES)	CC22700237
000326	071415		•STX	•SAVX	ERROR ADDRESS	CC22800238
000327	011401		•LDA	•TEST		CC22900239
000330	050335		•STA	•ERR1+2	GET TEST NO.	CC23000240
000331	011374		•LDA	•MTW1	EXPECTED	CC23100241
000332	021375		•LDB	•MTW2	ACTUAL	CC23200242
000333	002000	ERR1	•CALL	•SSWT	CALL SENSE SWITCH ROUTINE	CC23300243
000334	002461 R		•DATA	•0	TEST#	CC23400244
000335	000000		•DATA	•(ERPO)*	ERR PRINTOUT	CC23500245
000336	100345 R		•DATA	•TERM	SS3 EXIT	CC23600246
000337	000265 R		•DATA	•ELCP	LOOP ON ERROR	CC23700247
000340	000641 R		•LDB	•SAVB	RESTORE B	CC23800248
000341	021414		•LDX	•SAVX		CC23900249
000342	031415		•JMP*	•MERR	PROCEED WITH TEST	CC24000250
000344	100322 R		*	ERROR PRINTOUT SUBROUTINE		CC24100251
000345	000000	ERPC	•ENTR	•0		CC24200252
000346	002000		•CALL	•OUTC	CR/LF	CC24300253
000347	003070 R		•LDA	•SWCH		CC24400254
000350	011413		•JAZ	•*4		CC24500255
000351	001010		•JMP	•ERP1		CC24600256
000352	000355 R		•INR	•SWCH	SET TO BYPASS HEADING	CC24700257
000355	041413		•LDXI	•HG10		CC24800258
000356	006030		•CALL	•OUTD		CC24900259
000357	001511 R		•LDA	•TEST	TEST NO.	CC25000260
000360	002000		•CALL	•OUTE		CC25100261
000361	003123 R		•LDA	•SAVX	ADDR	CC25200262
000362	011401	ERP1	•CALL	•OUTE		CC25300263
000363	002000		•LDAI	•0120240		CC25400264
000364	003077 R		•CALL	•OUTB		CC25500265
000365	011415		•LDA	•MTW1	EXP	CC25600266
000366	002000		•JMP	•ERP2		CC25700267
000367	003077 R					
000370	006010					
000371	120240					
000372	002000					
000373	003055 R					
000374	011374					
000375	001000					

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000376	000622	R				
000622			,ORG	,0622	CC25800268	
000622	002000	ERP2	,CALL	,OUTE	CC25900269	
000623	003077	R				
000624	006010		,LDIAI	,0120240	CC26000270	
000625	120240					
000626	002000		,CALL	,OUTB	CC26100271	
000627	003055	R				
000630	002000		,CALL	,OUTA	CC26200272	
000631	003021	R				
000632	011375		,LDA	,MTW2	ACTUAL	CC26300273
000633	002000		,CALL	,OUTE	CC26400274	
000634	003077	R				
000635	001000		,JMP*	,ERPO	RETURN	CC26500275
000636	100345	R				

* LOOP ON ERROR *						

000637	001200		,J9S2	,ERR1-2	SS2 EXIT FROM LOOPING	CC26600276
000640	000331	R				CC26700277
000641	001400	ELOP	,J9S3	,TERM	SS3 EXIT	CC26800278
000642	000265	R				CC26900279
000643	011374		,LDA	,MTW1		CC27100281
000644	005000		,NOP	,		CC27200282
000645	135000		,ERA	,0,1	READ ERROR WORD	CC27300283
000646	001010		,JAZ	,ELCP-2	ERROR AGAIN? NO,TRY AGAIN	CC27400284
000647	000637	R				
000650	131374		,ERA	,MTW1	RESTORE	CC27500285
000651	051375		,STA	,MTW2		CC27600286
000652	001000		,JMP	,ERR1-2	REPORT	CC27700287
000653	000331	R				

* SUBTEST ROLNTINES *						

* UNIQUE ADDRS *						
000654	000000	TUAT	,ENTR	,0		CC27800288
000655	006010		,LDIAI	,1	TEST = 1	CC27900289
000656	000001					CC28000290
000657	051401		,STA	,TEST		CC28100291
000660	005001		,TZA	,	INIT TBL	CC28200292
000661	051565		,STA	,TBL		CC28300293
						CC28400294
						CC28500295
						CC28600296
						CC28700297

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000662	002000	TUAA	•CALL	•UACAsTBL•TUAB GET FRST	CC28800298
000663	000170 R				
000664	001565 R				
000665	000702 R				
000666	051405		•STA	•FRST	CC28900299
000667	002000		•CALL	•UACAsTBL•TUAB GET LAST	CC29000300
000670	000170 R				
000671	001565 R				
000672	000702 R				
000673	051406		•STA	•LAST	CC29100301
000674	001400		•JSS3	•TERM	CC29200302
000675	000265 R			SS3 TERMINATE TESTS	
000676	002000		•CALL	•IUA	CC29300303
000677	000727 R			INIT MEMORY	
000700	001000		•JMP	•TUAA	CONTINUE
000701	000662 R				CC29400304
000702	005001	TUAB	•TZA	•	CC29500305
000703	051565		•STA	•TBL	CC29600306
000704	006010		•LDIAI	•1	CC29700307
000705	000001			REP = 1	
000706	051404		•STA	•REP	CC29800308
000707	002000	TUAC	•CALL	•UACAsTBL•(TUAT)* GET FRST	CC29900309
000710	000170 R				
000711	001565 R				
000712	100654 R				
000713	051405		•STA	•FRST	CC30000310
000714	002000		•CALL	•UACAsTBL•(TUAT)* GET LAST	CC30100311
000715	000170 R				
000716	001565 R				
000717	100654 R				
000720	051406		•STA	•LAST	CC30200312
000721	001400		•JSS3	•TERM	CC30300313
000722	000265 R			SS3 TERMINATE TESTS	
000723	002000		•CALL	•IUA	CC30400314
000724	000741 R			TEST UNIQUE ADDRS	
000725	001000		•JMP	•TUAC	CONTINUE
000726	000707 R				CC30500315
	*			INIT UNIQUE ADDRS	CC30600316
000727	000000	IUA	•ENTR	•0	CC30700317
000730	031405		•LDX	•FRST	CC30800318
000731	005041	IUA1	•TXA	•	CC30900319
000732	055000		•STA	•0•1	CC31000320

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000733	005144	•IXR	•	X = X+1	CC31100321	
000734	141406	•SUB	•LAST	DONE ?	CC31200322	
000735	001004	•JAN	•TUA1	NO,CONTINUE	CC31300323	
000736	000731 R					
000737	001000	•JMP	•(ILA)*	RETURN	CC31400324	
000740	100727 R	*	TEST UNIQUE ADDRS			
000741	000000	TUA	•ENTR	•0	CC31500325	
000742	021404		•LDB	•REP	CC31600326	
000743	031405		•LDX	•FRST	CC31700327	
000744	005041	TUA1	•TXA	•	CC31800328	
000745	135000		•ERA	•0•1	CC31900329	
000746	001010		•JAZ	•*•7	CC32000330	
000747	000755 R				CC32100331	
000750	071374		•STX	•MTW1	CC32200332	
000751	131374		•ERA	•MTW1	CC32300333	
000752	051375		•STA	•MTW2	CC32400334	
000753	002000		•CALL	•MERR	CC32500335	
000754	000322 R		•TXA	•	CC32600336	
000755	005041		•IXR	•	CC32700337	
000756	005144		•SUB	•LAST	CC32800338	
000757	141406		•JAN	•TUA1	CC32900339	
000760	001004		•JBZ	•TUA+1	CONTINUES ? YES	CC33000340
000761	000744 R		•DBR	•		
000762	001020		•JBZ	•(TLA)*	DONE ? YES,RETURN	CC33100341 CC33200342
000763	000742 R		•JMP	•TUA+1	NO,CONTINUE	CC33300343
000764	005322					
000765	001020					
000766	100741 R					
000767	001000					
000770	000742 R	*****				
		*			CC33400344	
		*			CC33500345	
		*	ALL ZEROS		CC33600346	
		*			CC33700347	
000771	000000	TAZT	•ENTR	•0	ENTRY/EXIT	CC33800348
000772	002000		•CALL	•IAZ	INIT	CC33900349
000773	001003 R		•LDAI	•3	REP = 3	CC34000350
000774	006010		•STA	•REP		CC34100351
000775	000003		•CALL	•TES	TEST PATTERN	CC34200352

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001000	001336 R				
001001	001000	JMP	(TAZT)*	RETURN	CC34300353
001002	100771 R	*	INIT ALL ZEROS		CC34400354
001003	000000	IAZ	.ENTR ,0		CC34500355
001004	006010		.LDAI ,2	TEST = 2	CC34600356
001005	000002				
001006	051401		.STA .TEST		CC34700357
001007	005001		.TZA ,	BITS = 0	CC34800358
001010	051407		.STA .BITS		CC34900359
001011	051410		.STA .PAT1	PATTERN1 = 0	CC35000360
001012	002000		.CALL .SET	SET PATTERN INTO MEMORY	CC35100361
001013	001321 R				
001014	001000	JMP	(IAZ)*		CC35200362
001015	101003 R				

		*	ALL ONES		CC35300363
		*			CC35400364
		*			CC35500365
		*			CC35600366
001016	000000	TAOT	.ENTR ,0	ENTRY/EXIT	CC35700367
001017	002000		.CALL ,IAC	INIT	CC35800368
001020	001030 R				
001021	006010		.LDAI ,3	REP = 3	CC35900369
001022	000003				
001023	051404		.STA .REP		CC36000370
001024	002000		.CALL .TES	TEST PATTERN	CC36100371
001025	001336 R				
001026	101000	JMP	(TAOT)*	RETURN	CC36200372
001027	101016 R	*	INIT ALL ONES		
001030	000000	IAO	.ENTR ,0		CC36300373
001031	006010		.LDAI ,3	TEST = 3	CC36400374
001032	000003				CC36500375
001033	051401		.STA .TEST		CC36600376
001034	005001		.TZA ,	BITS = 0	CC36700377
001035	051407		.STA .BITS		CC36800378
001036	005211		.CPA ,	PATTERN1 = 1'S	CC36900379
001037	051410		.STA .PAT1	PATTERN1 = 1'S	CC37000380
001040	002000		.CALL .SET	SET PATTERN INTO MEMORY	CC37100381
001041	001321 R				
001042	001000	JMP	(IAO)*		CC37200382
001043	101030 R				

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001107	004250	,LRLA	,8	CC4C100411
001110	006110	,CRAI	,0525	CC4C200412
001111	000525			
001112	005012	,TAB	,	CC4C300413
001113	001000	,JMP	,(ICB1)*	CC4C400414
001114	101101 R		RETURN	
		*		
001115	000000	ICB2	,ENTR	
001116	031405	,LDX	,FRST	X = FRST
001117	005221	,DATA	,05221	A = NOT (B) ,WRITE PATTERN
001120	065000	,STB	,0,1	
001121	005144	,IXR	,	
001122	055000	,STA	,0,1	
001123	005144	,IXR	,	
001124	005041	,TXA	,	DONE?
001125	141406	,SUB	,LAST	
001126	005311	,DAR	,	
001127	001010	,JAZ	,(ICB2)*	DONE ? YES, RETURN
001130	101115 R	,JMP	,ICB2+2	CONTINUE
001131	001000			
001132	001117 R			
		*	TEST CHECKER BOARD	
001133	000000	TCB	,ENTR	,0
001134	011404	,LDA	,REP	REP1 = REP
001135	051403	,STA	,REP1	
001136	031405	,LDX	,FRST	READ PATTERN , INIT
001137	061374	,STB	,MTW1	EXPECTED = PATTERN
001140	005021	,TBA	,	TEST FIRST WORD
001141	135000	,ERA	,0,1	
001142	001010	,JAZ	,*+6	
001143	001150 R			
001144	131374	,ERA	,MTW1	BAD, CALL MERR
001145	051375	,STA	,MTW2	
001146	002000	,CALL	,MERR	
001147	000322 R			
001150	005221	,DATA	,05221	OK,
001151	005144	,IXR	,	TEST SECOND WORD
001152	051374	,STA	,MTW1	
001153	135000	,ERA	,0,1	
001154	001010	,JAZ	,*+6	
001155	001162 R			
001156	131374	,ERA	,MTW1	BAD, CALL MERR
				CC43500445

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001157	051375	,STA	,MTW2	CC43600446
001160	002000	,CALL	,MERR	CC437L0447
001161	000322 R			
001162	005041	,TXA	,	CC43800448
001163	005144	,IXR	,	CC43900449
001164	141406	,SUB	,LAST	CC44000450
001165	001004	,JAN	,TCBB	CC44100451
001166	001137 R			
001167	011403	,LDA	,REP1	CC44200452
001170	001010	,JAZ	,TCBB-1	CC44300453
001171	001136 R			
001172	005311	,DAR	,	CC44400454
001173	001010	,JAZ	,(TCB)*	CC44500455
001174	101133 R			
001175	051403	,STA	,REP1	CC44600456
001176	001000	,JMP	,TCBB-1	CC44700457
001177	001136 R			

*

* WORST CASE TEST

*

001200	000000	TWCT	,ENTR	,0	SELECT WORST CASE PATTERN TABLE	CC45200462
001201	006010		,LDIAI	,4	TEST = 4 + N	CC453L0463
001202	000004					
001203	051401		,STA	,TEST		CC45400464
001204	006010		,LEAI	,3	REP = 3	CC45500465
001205	000003					
001206	051404		,STA	,REP		CC45600466
001207	011402		,LDA	,MTYP		CC45700467
001210	006150		,ANAI	,03	GET TBL ADDRS	CC45800468
001211	000003					
001212	006120		,ADDI	,TBL1	TBL1 = TBL1,TBL2,TBLF,TBL1	CC45900469
001213	001577 R					
001214	005012		,TAB	,		CC46000470
001215	026000		,LDB	,0,2		CC46100471
001216	005001	TWCA	,TZA	,		CC46200472
001217	056000		,STA	,0,2		CC46300473
001220	061223		,STB	,TWCB+2		CC46400474
001221	002000	TWCB	,CALL	,UACAA,0,(TWCT)*	GET WORST CASE PATTERN FROM TABLE	CC46500475
001222	000170 R					
001223	000000					
001224	101200 R					

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001225	002000	.CALL	.IWC	INIT WCRST CASE	CC46600476
001226	001237 R	.CALL	.TES	TEST PATTERN	CC46700477
001227	002000	.CALL	.IWCC	INIT WCRST CASE COMPLIMENT	CC46800478
001230	001336 R	.CALL	.TES	TEST MEMORY	CC46900479
001231	002000	.JMP	.TWCB		CC47000480
001232	001252 R	*	INIT WCRST CASE		CC47100481
001233	002000	IWC	.ENTR .0		CC47200482
001234	001336 R	.STA	.BITS		CC47300483
001235	001000	.TZA	,	PAT1 = 0	CC47400484
001236	001221 R	.STA	.PAT1		CC47500485
001237	000000	.CPA	,	PAT2 = 1	CC47600486
001240	051407	.STA	.PAT2		CC47700487
001241	005001	.CALL	.SET	SET PATTERN INTO MEMORY	CC47800488
001242	051410	.INR	.TEST		CC47900489
001243	005211	.JMP	.(IWC)*		CC48000490
001244	051411	*	INIT WCRST CASE COMPLIMENT		CC48100491
001245	002000	IWCC	.ENTR .0		CC48200492
001246	001321 R	.TZA	,	COMPLIMENT PAT1 AND PAT2	CC48300493
001247	041401	.STA	.PAT2		CC48400494
001250	001000	.CPA	,		CC48500495
001251	101237 R	.STA	.PAT1		CC48600496
001252	000000	.CALL	.SET	SET PATTERN INTO MEMORY	CC48700497
001253	005001	.JMP	.(IWCC)*		CC48800498
001254	051411	*****	*****	*****	CC48900499
001255	005211	*	MISC ROUTINES	*	CC49000500
001256	051410	*	DERIVE ADDRS PARITY	*	CC49100501
001257	002000	*	ADDRS IN (A), RETURN PAT(0/1)	*	CC49200502
001258	001321 R	*	ENTRY/EXIT	*	CC49300503
001259	001000	DAP	.ENTR .0		CC49400504
001260	101252 R	.JSS3	.TERM	SS3 TERMINATE TESTS	CC49500505
001263	000000				CC49600506
001264	001400				CC49700507
001265	000265 R				

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001266	061317		,STB	,DAP3	SAVE B	CC49800508
001267	071320		,STX	,DAP3+1	SAVE X	CC49900509
001270	005006		,ZERO	,06	ZERO B,X	CC50000510
001271	031405		,LDX	,FRST	ATTEMPT TO MAKE CONSOLE LIGHTS MORE VISIBLE	CC50100511
001272	151407		,ANA	,BITS	SELECT BITS	CC50200512
001273	001010	DAP1	,JAZ	,DAP2	DONE?	CC50300513
001274	001304 R		,LLSR	,1	NO, GET NEXT BIT	CC50400514
001275	004541		,JBZ	,DAP1	EVEN PARITY?	CC50500515
001277	001273 R		,IXR	,	NO	CC50600516
001300	005144		,T2B	,	RESET B	CC50700517
001301	005002		,JMP	,DAP1	CONTINUE	CC50800518
001303	001273 R	DAP2	,TXA	,	A=PAT1 IF EVEN	CC50900519
001305	006150		,ANAI	,1	A=PAT2 IF ODD	CC51000520
001306	000001		,ADDI	,PAT1		CC51100521
001307	006120		,TAX	,		
001310	001410 R		,LDA	,0,1		CC51200522
001312	015000		,LDB	,DAP3	RETURN	CC51300523
001313	021317		,LDX	,DAP3+1		CC51400524
001314	031320		,JMP	,(DAP)*		CC51500525
001315	001000					CC51600526
001316	101263 R	DAP3	,BSS	,2		CC51700527
001317			*			CC51800528
			SET		SET MEMORY TO TEST PATTERN	CC51900529
			*		FRST, LAST, BITS, PAT1, PAT2	CC52000530
			*			CC52100531
			*			CC52200532
001321	000000	SET	,ENTR	,0	ENTRY/EXIT	CC52300533
001322	031405		,LDX	,FRST	X=FIRST ADDRS	CC52400534
001323	005041	SET1	,TXA	,	DERIVE ADDRS PATTERN	CC52500535
001324	002000		,CALL	,DAP		CC52600536
001325	001263 R		,STA	,0,1	STORE PATTERN	CC52700537
001326	055000		,TXA	,	DONE?	CC52800538
001327	005041		,SUB	,LAST		CC52900539
001331	001010		,JAZ	,(SET)*	YES, RETURN	CC53000540
001332	101321 R		,IXR	,	ADDRS = ADDRS+1	CC53100541

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001334	001000		JMP	SET1	CONTINUE	CC53200542
001335	001323 R	*				
		*	TES		TEST MEMORY PATTERN REP,FRST, LAST,BITS,PAT1,PAT2	CC53300543 CC53400544 CC53500545 CC53600546 CC53700547
		*				
001336	000000	TES	ENTR	,0	ENTRY/EXIT	CC53800548
001337	021404		LDB	REP	B = REPETITIONS	CC53900549
001340	031405		LDX	FRST	X = FIRST ADDRS	CC54000550
001341	005041	TES1	TXA	,	DERIVE ADDRS PATTERN	CC54100551
001342	002000		CALL	CAP		CC54200552
001343	001263 R					
001344	051374		STA	MTW1		CC54300553
001345	015000		LDA	,0,1	GET ACTUAL PATTERN	CC54400554
001346	051375		STA	MTW2		CC54500555
001347	131374		ERA	MTW1	ERROR?	CC54600556
001350	001010		JAZ	,**+4		CC54700557
001351	001354 R		CALL	MERR	YES, CALL MERR	CC54800558
001352	002000					
001353	000322 R		JSS3	TERM	SS3 TERMINATE TESTS	CC54900559
001354	001400					
001355	000265 R					
001356	005041		TXA	,	DONE?	CC55000560
001357	141406		SUB	LAST		CC55100561
001360	001010		JAZ	TES2	YES, JMP TES2	CC55200562
001361	001365 R		IXR	,	ADVANCE X TO NEXT WORD	CC55300563
001362	005144		JMP	TES1	CONTINUE	CC55400564
001363	001000					
001364	001341 R					
001365	001020	TES2	JBZ	TES+2	CONTINUES ? , YES	CC55500565
001366	001340 R					
001367	005322		IDR	,	NO, DONE ?	CC55600566
001370	001020		JEZ	(TES)*	YES, RETURN	CC55700567
001371	101336 R					
001372	001000		JMP	TES+2	NO, CONTINUE	CC55800568
001373	001340 R					

* DATA

*
* DATA TABLE

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001374		*				0056400574
001375		MTW1	,BSS	,1	SAVE VALID PATTERN	0056500575
001376		MTW2	,BSS	,1	SAVE PATTERN READ	0056600576
001377	000000	TCYC	,BSS	,1	TOTLE CYCLES EXECUTED	0056700577
001400	000000	CYCL	,DATA	,0	CYCLES	0056800578
001401	000000	EMEM	,DATA	,0	PRINT END MEMO FLAG	0056900579
001402	000000	TEST	,DATA	,0	TEST NUMBER	0057000580
001402	000002	MTYP	,DATA	,2	MACHINE TYPE I=0,L=1,F=2	0057100581
001403		REP1	,BSS	,1	REP CTR	0057200582
001404		REP	,BSS	,1	REP CTR	0057300583
001405	000000	FRST	,DATA	,0	FIRST ADDRESS	0057400584
001406	000000	LAST	,DATA	,0	LAST ADDRESS	0057500585
001407		BITS	,BSS	,1	BIT SELECT PATTERN	0057600586
001410		PAT1	,BSS	,1	PATTERN 1	0057700587
001411		PAT2	,BSS	,1	PATTERN 2	0057800588
001412	000000	TERR	,DATA	,0	ERROR TOTAL	0057900589
001413	000000	SWCH	,DATA	,0	PRINT ERROR HDG FLG	0058000590
001414	000000	SAVB	,DATA	,0		0058100591
001415	000000	SAVX	,DATA	,0		0058200592
		*				0058300593
		*				0058400594
		*				0058500595
001416	106612	CRLF	,SET	,0106612	CARRIAGE RETURN / LINE FEED	0058600596
001416	106612	HDG1	,DATA	,CRLF,"MEMORY TEST",0		0058700597
001417	146705					
001420	146717					
001421	151331					
001422	120324					
001423	142723					
001424	152240					
001425	000000					
001426	152317	HDG3	,DATA	,,"TOO MANY PARAMETERS",CRLF,0		0058800598
001427	147640					
001430	146701					
001431	147331					
001432	120320					
001433	140722					
001434	140715					
001435	142724					
001436	142722					
001437	151640					
001440	106612					

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001441	000000		
001442	146717	HDG5 DATA , 'MODULE NOT WITHIN MEMORY RANGE', CRLF, 0	CC58900599
001443	142325		
001444	146305		
001445	120316		
001446	147724		
001447	120327		
001450	144724		
001451	144311		
001452	147240		
001453	146705		
001454	146717		
001455	151331		
001456	120322		
001457	140716		
001460	143705		
001461	106612		
001462	000000		
001463	106612	HDG6 DATA , CRLF, 'CYCLES = ', 0	CC59000600
001464	141731		
001465	141714		
001466	142723		
001467	120275		
001470	120240		
001471	000000		
001472	106612	HDG8 DATA , CRLF, 'END MEMO', 0	CC59100601
001473	142716		
001474	142240		
001475	146705		
001476	146717		
001477	000000		
001500	106612	HDG9 DATA , CRLF, 'ERROR TOTAL = ', 0	CC59200602
001501	142722		
001502	151317		
001503	151240		
001504	152317		
001505	152301		
001506	146240		
001507	136640		
001510	000000		
001511	152305	HG10 DATA , 'TEST ADDRESS EXPECTED ACTUAL', CRLF, 0	CC59300603
001512	151724		

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001513 120240
001514 120301
001515 142304
001516 151305
001517 151723
001520 120240
001521 142730
001522 150305
001523 141724
001524 142704
001525 120240
001526 140703
001527 152325
001530 140714
001531 106612
001532 000000
001533 106612 HG11 ,DATA ,CRLF, 'NUMBER OF CYCLES RUN =',0

CC594LU6U4

*

* TABLES HAVE THE FORM

* NAME BSS 1

TABLE NAME, INDEX FTR FOR TABLE

* BSS 1

MAX LENGTH OR CURRENT LENGTH OF TABLE

* BSS N

(DEPENDING ON ROUTINE ACCESSING TABLE)

* BODY OF TABLE, N=OCTAL MAX LENGTH

CC59500605

CC59600606

CC59700607

CC59800608

CC59900609

CC60000610

CC60100611

CC60200612

CC60300613

CC60400614

CC60500615

001550 000000 TBLI ,DATA ,0,4 620/1
001551 000004
001552 000203 ,DATA ,0203 AMPEX

CC60600616

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001553	004001	,DATA	,04001	FABRI-TEK OR LITTCA	CC6C700617	
001554	000202	,DATA	,0202	FERROXCUBE	CC6C800616	
001555	004010	,DATA	,04010	KERONIX	CC6C900619	
*						
* TBLL = WORST CASE PATTERNS FOR 620/L MEMORIES						
*						
001556	000000	TBLL	,DATA	,0,2	CC61100621	
001557	000002				CC61200622	
001560	000140		,DATA	,0140,0144	CC61300623	
001561	000144				CC61400624	
*						
* TBLF = WORST CASE PATTERNS FOR 620/F MEMORIES						
*						
001562	000000	TBLF	,DATA	,0,1	CC61500625	
001563	000001				CC61600626	
001564	004001		,DATA	,04001	CC61700627	
*						
* TBL CONTAINS BEGINNING AND ENDING ADDRS OF MEMORY SEGMENT TO BE TESTED						
*						
001565	000000	TBL	,DATA	,0	JBL INDEX	CC62100631
001566	000010		,DATA	,8	TBL LENGTH	CC62200632
001567	000000		,DATA	,0,1,040,043,0400,0621,03550,07755		CC62300633
001570	000001					CC62400634
001571	000040					CC62500635
001572	000043					
001573	000400					
001574	000621					
001575	003550					
001576	007755					
*						
001577	001550 R	TBL1	,DATA	,TBLI,TBLL,TBLF,TBLI	CC62600636	
001600	001556 R				CC62700637	
001601	001562 R					
001602	001550 R					
*						
* ETRP--TRAP TO LOCATION X STARTING FROM LOCATION Y.						
* IF LOCATION X IS REACHED: RESTORE LOCATIONS X & X+1. PRINT						
* THE CURRENT VALUES OF REGISTERS A,B,X, AND RETURN TO THE						
* EXEC SUPERVISOR						
*						
* NOTES: CONTENTS OF LOCATIONS X AND X+1 MUST BE RESTORED BY						
* USER IF TRAP IS NOT REACHED BY THIS ROUTINE						
*						

					FORMATS TX,Y.	
001603	006020	ETRP	.LDBI	,ETS1	(B) POINTS TO PARAMETER TBL	CC63600646
001604	003216 R		.LDA	,ETS1	X = PREVIOUS Y	CC63700647
001605	013216		.STA	,ETS1+1		CC63800648
001606	053217		.CALL	,INPG	INPUT OCTAL NUMBER	CC63900649
001607	002000					CC64000650
001610	002771 R		.JMP	,ETCP	TERMINATION EXIT VIA SSJ	CC64100651
001611	001000					CC64200652
001612	002157 R		.JMP	,ETCP	ABORT	CC64300653
001613	001000					CC64400654
001614	002157 R		.JMP	,ETR1	COMMA EXIT--GET SECND PARAMETER	CC64500655
001615	001000					CC64600656
001616	001671 R					
		*	NORMAL RETURN FROM INPG			
001617	056000		.STA	,0,2	STORE PARAMETER	CC64700657
001620	006030		.LDBI	,ETS1+2	TEMP STORE ADDRESS	CC64800658
001621	003220 R		.LDB	,ETS1		CC64900659
001622	023216		.LDA	,0,2	X PARAMETER(TRAP LOCATION)	CC65000660
001623	016000		.STA	,0,1	SAVE CONTENTS OF LOCATION X AT TSC0	CC65100661
001624	055000		.LDA	,1,2		CC65200662
001625	016001		.STA	,1,1	SAVE CONTENTS OF LOC. X+1 AT TSC1	CC65300663
001626	055001		.LDAI	,02000	OP CODE FOR JMPM	CC65400664
001627	006010					CC65500665
001630	002000		.STA	,0,2	STORE JMPM AT LOC X	CC65600666
001631	056000		.LDAI	,ETR2		CC65700667
001632	006010					
001633	001701 R		.STA	,1,2	STORE TRAP RETURN ADDRESS AT X+1	CC65800668
001634	056001				LOAD PSEUDO REGISTERS AND GOTC LOC Y	CC65900669
001635	001000		.JMP	,EGC1		
001636	002022 R					
		*				
001637	053213	ETR3	.STA	,EAR1	PUT A CONTENTS INTC PSEUDC A REG	CC66000670
001640	063214		.STB	,EBR1	PUT B CONTENTS INTC PSEUDC B REG	CC66100671
001641	073215		.STX	,EXR1	PUT X CONTENTS INTC PSEUDC X REG	CC66200672
001642	031701		.LDX	,ETR2		CC66300673
001643	005344		.DXR	,		CC66400674
001644	005344		.DXR	,	SET X REG TO TRAP LOCATION ADDRESS	CC66500675
001645	013220		.LDA	,ETS1+2		CC66600676
001646	023221		.LDB	,ETS1+3		CC66700677
						CC66800678

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001712	003077	R				CC69900709
001713	002000		•CALL	•INPG	INPUT OCTAL AND/OR PERICE	
001714	002771	R	•JMP	•ETCP	TERMINATION EXIT VIA SSJ	CC7C000710
001715	001000		•JMP	•ETCP	ABORT EXIT	CC7C100711
001716	002157	R	•JMP	•ETCP	COMMA EXIT--ACCEPT IT	CC7C200712
001721	001000		•JMP	•*+2		
001722	001723	R	*	NORMAL RETURN FROM INPG		CC7C300713
001723	053216		•STA	•ETS1	SAVE INPUT	CC7C400714
001724	013232		•LDA	•TS04	TS04=DIGIT COUNTER FOR INPG	CC7C500715
001725	001010		•JAZ	•ETCP	0=NO OCTAL INPUT,RETURN TO SUPERVISOR	CC7C600716
001726	002157	R	•LDA	•ETS1		CC7C700717
001727	013216		•STA	•EAR1	STORE NEW VALUE IN PSEUDO A	CC7C800718
001731	001000		•JMP	•ETCP	RETURN TO SUPERVISOR	CC7C900719
001732	002157	R	*			CC71000720
			*			CC71100721
			*	DISPLAY/CHANGE THE PSEUDO B REGISTER		CC71200722
			*			CC71300723
			*			CC71400724
001733	013224	EBRG	•LDA	•EK00	ASCII BLANK(SPACE)	CC71500725
001734	002000		•CALL	•CUTA		CC71600726
001735	003021	R	•LDA	•EBR1	LOAD PSEUDO B	CC71700727
001736	013214		•CALL	•CUTE	PRINT CONTENTS	CC71800728
001740	003077	R	•CALL	•INPG	INPUT OCTAL AND/OR PERICE	CC71900729
001741	002000		•JMP	•ETCP	TERMINATION EXIT VIA SSJ	CC72000730
001742	002771	R	•JMP	•ETCP	ABORT EXIT	CC72100731
001743	001000		•JMP	•ETCP	COMMA EXIT--ACCEPT IT	CC72200732
001751	053216		*	NORMAL RETURN FROM INPG		CC72300733
001752	013232		•STA	•ETS1	SAVE INPUT	CC72400734
001753	001010		•LDA	•TS04	TS04=DIGIT COUNTER FOR INPG	CC72500735
001754	002157	R	•JAZ	•ETCP	0=NO OCTAL INPUT,RETURN TO SUPERVISOR	CC72600736

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001755	013216		LDA	ETS1			CC72700737
001756	053214		STA	EER1		STORE NEW VALUE IN PSELDC E	CC72800738
001757	001000		JMP	ETCP		RETURN TO SUPERVISOR	CC72900739
001760	002157 R	*					
		*					CC73000740
		*					CC73100741
		*	DISPLAY/CHANGE THE PSEUDO X REGISTER				CC73200742
		*					CC73300743
		*					CC73400744
001761	013224	EXRG	LDA	EK00		ASCII BLANK(SPACE)	CC73500745
001762	002000		CALL	CUTA			CC73600746
001763	003021 R		LDA	EXR1		LOAD PSEUDO X	CC73700747
001764	013215		CALL	CUTE		PRINT CONTENTS	CC73800748
001765	002000		CALL	INPG		INPUT OCTAL AND/OR PERIOD	CC73900749
001766	003077 R		CALL	ETCP		TERMINATION EXIT VIA SS3	CC74000750
001767	002000		JMP			ABORT	CC74100751
001770	002771 R		JMP	ETCP		COMA EXIT--ACCEPT IT	CC74200752
001771	001000		JMP				CC74300753
001772	002157 R		JMP				CC74400754
001773	001000		JMP				CC74500755
001774	002157 R		JMP				CC74600756
001775	001000		JMP				CC74700757
001776	001777 R	*	NORMAL RETURN FROM INPG				CC74800758
001777	053216		STA	ETS1		SAVE INPUT	CC74900759
002000	013232		LDA	TS04		TS04=DIGIT COUNTER FOR INPG	CC75000760
002001	001010		JAZ	ETCP		0=NO OCTAL INPUT. RETURN TO SUPERVISOR	CC75100761
002002	002157 R		LDA	ETS1			CC75200762
002003	013216		STA	EXR1		STORE NEW VALUE IN PSELDC X	CC75300763
002004	053215		JMP	ETCP		RETURN TO SUPERVISOR	CC75400764
002005	001000						CC75500765
002006	002157 R	*					CC75600766
		*					CC75700767
		*					CC75800768
		*	EGOT--LOAD PSEUDO REGISTERS INTO A,B,X AND TRANSFER TO				CC75900769
		*	LOCATION SPECIFIED BY USER.				
		*	THE PSEUDO REGISTERS CAN BE PRESET WITH THE A,B,X				
		*	UTILITY FUNCTIONS.				

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002007	002000	EG01	*CALL	*INPG	INPUT OCTAL NUMBER	CC7E000770
002010	002771 R		*JMP	*ETCP	TERMINATION EXIT VIA SSJ	CC7E100771
002011	001000		*JMP	*ETCP		CC7E200772
002012	002157 R		*JMP	*ETCP	ABORT	CC7E300773
002013	001000		*JMP	*ETCP		CC7E400774
002014	002157 R		*JMP	*#+2	COMMA EXIT--ACCEPT IT	CC7E500775
002015	001000		*JMP	*#+2		CC7E600776
002016	002017 R		*	NORMAL RETURN FROM INPG		CC7E700777
002017	053217		*STA	*ETS1+1		CC7E800778
002020	002000		*CALL	*OUTC	DO A CR + LF	CC7E900779
002021	003070 R					CC77000780
002022	013213	EG01	*LDA	*EAR1	LOAD PSEUDO A REG.	CC77100781
002023	023214		*LDB	*EBR1	LOAD PSEUDO B REG.	CC77200782
002024	033215		*LDX	*EXR1	LOAD PSEUDO X REG.	CC77300783
002025	001000		*JMP*	*ETS1+1		CC77400784
002026	103217 R		*	DLMP CORE MEMORY TO TTY PRINTER		CC77500785
002027	002000	EDUM	*CALL	*INPG	INPUT START LOCATION (OCTAL)	CC77600786
002030	002771 R		*JMP	*ETCP	TERMINATION EXIT VIA SSJ	CC77700787
002031	001000		*JMP	*ETCP	ABORT	CC77800788
002032	002157 R		*JMP	*#+2	COMMA EXIT--ACCEPT IT	CC77900789
002033	001000		*	NORMAL RETURN FROM INPG		CC78000790
002034	002157 R		*STA	*ETS1		CC78100791
002035	001000		*CALL	*OUTC	OUTPUT CR & LF	CC78200792
002036	002037 R					CC78300793
002037	053216		*LDA	*ETS1		CC78400794
002040	002000		*TAX	*		CC78500795
002041	003070 R		*CALL	*OLTF	OUTPUT MEMORY ADDRESS	CC78600796
002042	013216		*LDA	*EK00	ASCII BLANK(SPACE)	CC78700797
002043	005014		*CALL	*CUTA		
002044	002000	EDU1	*CALL			
002045	003134 R					
002046	013224					
002047	002000					
002050	003021 R					
002051	015000	EDU2	*LDA	*#1		
002052	002000		*CALL	*OUTE	PRINT LOCATION CONTENTS	
002053	003077 R					

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002054	001400		*JSS3	*ETOP		CC7E800798
002055	002157 R		*INCR	*045	INCREMENT X AND PLT INTO A&X	CC7E900799
002056	005145		*LLSR	*3	LINE LENGTH IS 8 LOCATIONS	CC79000800
002057	004543		*JBZ	*EDU4	NEXT LINE	CC79100801
002060	001020		*JMP	*EDU2	NEXT WORD	CC79200802
002061	002064 R	*				CC79300803
002062	001000	EDU4	*CALL	*OUTC	OUTPUT CR & LF	CC79400804
002063	002051 R		*TXA	*		CC79500805
002064	002000		*JMP	*EDU1		CC79600806
002065	003070 R	*				CC79700807
002066	005041	*				CC79800808
002067	001000	*				CC79900809
002070	002044 R	*				CC8C000810
		*				CC8C100811
		*				CC8C200812
		*				CC8C300813
		*				CC8C400814
		*				
					PRINT/CHANGE CONTENTS OF MEMORY LOCATION SPECIFIED BY LSER	
					*	
					*	
					*	
					*	
					*	
002071	002000	ECNG	*CALL	*INPG	INPUT OCTAL MEMORY ADDRESS	CC8C500815
002072	002771 R		*JMP	*ETOP	TERMINATION EXIT VIA SS3	CC8C600816
002073	001000		*JMP	*ETOP		CC8C700817
002074	002157 R		*JMP	*ETOP	ABORT	CC8C800818
002075	001000		*JMP	*#42	COMMA EXIT--ACCEPT IT	CC8C900819
002076	002157 R		*NORMAL RETURN FROM INPG			CC8E1000820
002077	001000		*TAX	*		CC8E1100821
002100	002101 R	ECN3	*LEAI	*#=	EQUAL SIGN	CC8E1200822
002101	005014		*CALL	*OUTA		CC8E1300823
002102	006010		*LEA	*0.1	OUTPUT OCTAL WORD	CC8E1400824
002103	000275		*CALL	*OUTE		CC8E1500825
002104	002000		*CALL	*INPG	INPUT OCTAL WORD	CC8E1600826
002105	003021 R		*JMP	*ETOP	TERMINATION EXIT VIA SS3	
002106	015000					
002107	002000					
002110	003077 R					
002111	002000					
002112	002771 R					
002113	001000					

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002114	002157 R				
002115	001000				
002116	002157 R				
002117	001000				
002120	002131 R				
		JMP	ETCP	ABORT	CC01700827
		JMP	ECN2	COMMA EXIT--PRINT NEXT LOCATION & CONTENTS	CC01800828
		* NORMAL RETURN FROM INPG WITH PERIOD			CC01900829
002121	053216		STA	ETS1	SAVE INPUT
002122	013232		LDA	TS04	TS04=DIGIT COUNTER FOR INPG
002123	001010		JAZ	*+4	
002124	002127 R		LDA	ETS1	GET LAST INPUT
002125	013216		STA	0,1	
002126	055000		JMP	ETCP	
002130	002157 R				
		*			
002131	053216	ECN2	STA	ETS1	SAVE INPUT
002132	013232		LDA	TS04	TS04=DIGIT COUNTER FOR INPG
002133	001010		JAZ	*+4	
002134	002137 R		LDA	ETS1	GET LAST INPUT
002135	013216		STA	0,1	STORE NEW VALUE IN LOCATION
002136	055000		CALL	OUTC	CR & LF
002137	002000				
002140	003070 R		INCR	045	INCREMENT X AND PUT INTO A AND X
002141	005145		CALL	OUTF	PRINT NEXT MEMORY ADDRESS
002142	002000				
002143	003134 R		JMP	ECN3	PRINT CONTENTS
002144	001000				
002145	002102 R		CALL	OUTH,0201	PRINT ENABLE
002146	002000	EBG2			
002147	003200 R		CALL	OUTC	OUTPUT CR&LF
002150	000201				
002151	002000		LDXI	MSG1	THIS IS THE 620 TEST EXECUTIVE
002152	003070 R		CALL	OUTD	OUTPUT MESSAGE
002153	006030				
002154	002272 R				
002155	002000				
002156	003123 R				
		*			CC04000850
		*			CC04100851
		*			CC04200852
		*			CC04300853
		*			CC04400854
		TEST EXECUTIVE SUPERVISOR			

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002157	006010	ETOP	•LDIAI	•0207	TTY BELL	CC84500655	
002160	000207		•CALL	•OUTA	OUTPUT	CC84600856	
002161	002000		•CALL	•OUTH•0201	PRINT ENABLE	CC84700857	
002162	003021 R		•CALL				
002163	002000		•CALL				
002164	003200 R		•CALL				
002165	000201		•LDIXI	•STTY		CC84800858	
002166	006030		•LDIA	•0•1		CC84900859	
002167	003054 R		•CRAI	•C102500		CC85000860	
002170	015000		•STA	•**+1		CC85100861	
002171	006110		•CIA	•0		CC85200862	
002172	102500		•CALL	•OUTC		CC85300863	
002173	052174		•STA	•**+1			
002174	102500		•CIA	•0			
002175	002000		•CALL				
002176	003070 R		•CALL	•INPB	INPUT ONE CHARACTER	CC85400864	
002177	002000		•JMP	•ETOP	ABORT EXIT	CC85500865	
002200	002522 R		•SUBI	•ETC4+1	SAVE INPUT	CC85600866	
002201	001000		•SUBI	•0212	LINE FEED CODE	CC85700867	
002202	002157 R		•JAZ	•ETOP	YES	CC85800868	
002203	052215		•STA	•3	CARRIAGE RETURN(0215)	CC85900869	
002204	006140		•SUBI	•JAZ	•ETOP	CC86000870	
002205	000212		•JAZ	•ETOP	YES		
002206	001010		ET04	•LDIAI	•0	GET ORIGINAL INPUT	CC86100871
002215	000000		•SUBI	•PA•		CC86200872	
002216	006140		•JAN	•EXIT	INVALID INPUT	CC86300873	
002217	000301		•SUBI	•032	2 CHAR	CC86400874	
002220	001004		•JAP	•EXIT	INVALID INPUT	CC86500875	
002221	002266 R		•ADDI	•(ETBL+032)*	INDIRECT ADDRESS PCINTER FCR UTILITY TABLE	CC86600876	
002222	006140		•STA	•**+3		CC86700877	
002223	000032						
002224	001002						
002225	002266 R						
002226	006120						
002227	102266 R						
002230	052233						

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002231	005007		,ZERO	,7	CLEAR REGISTERS A,E,X	CC8E800878
002232	001000		,JMP	,*		CC8E900879
002233	002232 R					
002234	001704 R	ETBL	,DATA	,EARQ	A PRINT/CHANGE PSEUDO A REG	CC87000880
002235	001733 R		,DATA	,EBRG	B PRINT/CHANGE PSEUDO B REG	CC87100881
002236	002071 R		,DATA	,ECNG	C PRINT/CHANGE MEMORY LOCATION	CC87200882
002237	002027 R		,DATA	,EDLM	D DUMP CORE TO TTY PRINTER	CC87300883
002240	002266 R		,DATA	,EXIT	E NOT USED	CC87400884
002241	002266 R		,DATA	,EXIT	F NOT USED	CC87500885
002242	002007 R		,DATA	,EGCT	G TRANSFER TO SPECIFIED LOCATION	CC87600886
002243	002266 R		,DATA	,EXIT	H NOT USED	CC87700887
002244	002266 R		,DATA	,EXIT	I NOT USED	CC87800888
002245	002266 R		,DATA	,EXIT	J NOT USED	CC87900889
002246	002266 R		,DATA	,EXIT	K NOT USED	CC88000890
002247	002266 R		,DATA	,EXIT	L NOT USED	CC88100891
002250	002266 R		,DATA	,EXIT	M NOT USED	CC88200892
002251	002266 R		,DATA	,EXIT	N NOT USED	CC88300893
002252	002266 R		,DATA	,EXIT	O NOT USED	CC88400894
002253	002266 R		,DATA	,EXIT	P NOT USED	CC88500895
002254	002266 R		,DATA	,EXIT	Q NOT USED	CC88600896
002255	002266 R		,DATA	,EXIT	R NOT USED	CC88700897
002256	002266 R		,DATA	,EXIT	S NOT USED	CC88800898
002257	001603 R		,DATA	,ETRP	T TRAP	CC88900899
002260	002266 R		,DATA	,EXIT	U NOT USED	CC89000900
002261	002266 R		,DATA	,EXIT	V NOT USED	CC89100901
002262	002266 R		,DATA	,EXIT	W NOT USED	CC89200902
002263	001761 R		,DATA	,EXRG	X PRINT/CHANGE PSEUDO X REG	CC89300903
002264	002266 R		,DATA	,EXIT	Y NOT USED	CC89400904
002265	002266 R		,DATA	,EXIT	Z NOT USED	CC89500905
		*				CC89600906
		*				CC89700907
		*				CC89800908
		*				CC89900909
002266	002000	EXIT	,CALL	,OUTG	PRINT INVALID & CR/LF	CC90000910
002267	003153 R		,JMP	,SETCP	RETURN TO TOP OF SUPERVISOR	CC90100911
002270	001000					
002271	002157 R					
		*				CC90200912
		*				CC90300913
		*				CC90400914
002272	106612	MSG1	,DATA	,CRLF, 'TEST EXEC', 0		CC90500915
002273	152305					

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002274 151724
002275 120305
002276 154305
002277 141640
002300 000000
002301 120240 MSG5 ,DATA ,* INVALID*,0
002302 144716
002303 153301
002304 146311
002305 142240
002306 000000

CC9C600916

*

* SENSE SWITCH SUBROUTINE *
* THIS SUBROUTINE PROVIDES A STANDARD SENSE SWITCH INTERFACE.
* THE CALLING SEQUENCE IS AS FOLLOWS
* THE A, B, AND X REGISTERS CONTAIN ERROR HALT VALUES.
* CALL SSWT
* DATA (U REGISTER VALUE)
* DATA (ERROR MESSAGE ADDRESS) (IF NEG. ERRCR SUB.)
* DATA (TERMINATION EXIT)
* DATA (LOOP ON ERRCR EXIT)
* NORMAL EXIT RETURN

* STANDARD SENSE SWITCH SETTINGS
* SS1 (SET) SUPPRESS ERROR PRINTOUT
* (RESET) ALLOW ERROR PRINTOUTS
* SS2 (SET) HALT ON ERRCR
* (IF SET AFTER HALT = CCNTINUE)
* (RESET) DO NOT HALT ON ERRCR
* (IF HALT ON ERROR SET FIRST THEN RESET CAN
* HALT CONDITION = LOOP UNTIL SET)
* SS3 (SET) TERMINATE TEST - RETURN TO BEGINING OF TEST
* (RESET) CONTINUE TEST

002307 052445 SSWP ,STA ,SSWS SAVE VOLATILE REGISTERS
002310 062446 ,STB ,SSWS+1
002311 072447 ,STX ,SSWS+2
002312 001400 ,JSS3 ,SSWE IF SS3 SET RETURN THROUGH TERMINATION EXIT
002313 002450 R
CC9C700917
CC9C800918
* CC9C900919
* CC91000920
* CC91100921
* CC91200922
* CC91300923
* CC91400924
* CC91500925
* CC91600926
* CC91700927
* CC91800928
* CC91900929
* CC92000930
* CC92100931
* CC92200932
* CC92300933
* CC92400934
* CC92500935
* CC92600936
* CC92700937
* CC92800938
* CC92900939
* CC93000940
* CC93100941
* CC93200942
CC93300943
* CC93400944
* CC93500945
* CC93600946

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002314	013225		LDA	,SCON	CHECK IF CONSOLE OR TTY MODE	CC93700947
002315	001010		JAZ	,SSWN		CC93800948
002316	002403 R					
002317	001100		JSS1	,SSW1	TELETYPE MODE - CHECK IF TTY SUPPRESSED	CC93900949
002320	002342 R					
002321	022461		LDB	,SSWT	GET 2ND PARAMETER	CC94000950
002322	005122		IBR	,		CC94100951
002323	016000		LDA	,0,2		CC94200952
002324	001010		JAZ	,SSW1		CC94300953
002325	002342 R					
002326	005012		TAB	,	CHECK IF BIT 15 SET	CC94400954
002327	006150		JANAI	,0100000		CC94500955
002330	100000					
002331	005014		TAX	,		CC94600956
002332	005021		TBA	,		CC94700957
002333	001040		JXZ	,**4		CC94800958
002334	002337 R					
002335	001000		JMP	,SSWR	CALL ERROR SUBROUTINE	CC94900959
002336	002433 R					
002337	005014		TAX	,	PRINT ERROR MESSAGE	CC95000960
002340	002000		CALL	,OUTD		CC95100961
002341	003123 R					
002342	001400	SSW1	JSS3	,SSWE	IF SS3 SET - RETURN THROUGH TERMINATION EXIT	CC95200962
002343	002450 R					
002344	013226		LDA	,SFLG	CHECK IF LOOPING	CC95300963
002345	001010		JAZ	,SSW4		CC95400964
002346	002377 R					
002347	001200	SSW2	JSS2	,SSW3	LOOPING - CHECK IF TERMINATE LOOPING	CC95500965
002350	002364 R					
002351	022461	SSWL	LDB	,SSWT	RETURN THROUGH LCOP EXIT	CC95600966
002352	005122		IBR	,		CC95700967
002353	005122		IBR	,		CC95800968
002354	005122		IBR	,		CC95900969
002355	016000		LDA	,0,2		CC96000970
002356	052363		STA	,**5		CC96100971
002357	012445		LEA	,SSWS	RETURN VOLATILE REGISTERS.	CC96200972
002360	022446		LDB	,SSWS+1		CC96300973
002361	032447		LDX	,SSWS+2		CC96400974
002362	001000		JMP	,*		CC96500975
002363	002362 R					
002364	005001	SSW3	TZA	,	RETURN TO NORMAL EXIT (CONTINUATION EXIT)	CC96600976
002365	053226		STA	,SFLG	CLEAR LOOP FLAG.	CC96700977

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002366	012461		LDA	,SSWT	CC96600976
002367	006120		AADDI	,4	CC96900979
002370	000004				
002371	052376		STA	,*+5	CC97000980
002372	012445		LDA	,SSWS	CC97100981
002373	022446		LDB	,SSWS+1	CC97200982
002374	032447		LDX	,SSWS+2	CC97300983
002375	001000	R	JMP	,*	CC97400984
002376	002375	R			
002377	001200	SSW4	JGS2	,SSW5	CHECK IF HALT ON ERROR CC97500985
002400	002410	R		JMP	,SSW3 RETURN TO NORMAL EXIT LCL. CC97600986
002401	001000				
002402	002364	R			
002403	013226	SSW5	LDA	,SFLG	CHECK IF LOOP FLAG ZERO CC97700987
002404	001010		JAZ	,SSW4	CC97800988
002405	002377	R			
002406	001100		JGS1	,SSW6	CC97900989
002407	002417	R			
002410	022461	SSW5	LDB	,SSWT	GET FIRST PARAMETER CC98000990
002411	016000		LDA	,0,2	CC98100991
002412	052416		STA	,*+4	CC98200992
002413	012445		LDA	,SSWS	RETURNED SAVED PARAMETERS. CC98300993
002414	022446		LDB	,SSWS+1	CC98400994
002415	032447		LDX	,SSWS+2	CC98500995
002416	005000		NOP	,	1ST PARAMETER STORED HERE AND EXECUTED. CC98600996
002417	001400	SSW6	JGS3	,SSWE	IF SSJ SET RETURN THROUGH TERMINATION EXIT CC98700997
002420	002450	R			
002421	013226		LDA	,SFLG	CHECK IF LOOPING CC98800998
002422	001010		JAZ	,*+4	CC98900999
002423	002426	R			
002424	001000		JMP	,SSW2	CC99001000
002425	002347	R			
002426	001200		JGS2	,SSW3	LOOP FLAG ZERO - CHECK IF LCCF REQUEST CC99101001
002427	002364	R			
002430	043226		JNR	,SFLG	INCREMENT LOOP FLAG CC99201002
002431	001000		JMP	,SSWL	JUMP THROUGH LOCF EXIT CC99301003
002432	002351	R			
002433	006150	SSWR	ANAI	,077777	ERROR SUBROUTINE MASK CLI BIT 15 CC99401004
002434	077777				
002435	052442		STA	,*+5	CC99501005
002436	012445		LDA	,SSWS	CC99601006
002437	022446		LDB	,SSWS+1	CC99701007

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002440	032447		SLDX	,SSWS+2		CC99801006
002441	002000		SJMP	,*	CALL ERROR SUBRCLTINE	CC99901009
002442	002441 R		SJMP	,SSW1		C10C001010
002443	001000		SJMP	,SSW1		C10C001010
002444	002342 R		SSWS	,BGS	,3	C10C101011
002445		SSWE	,TEA	,	JUMP THROUGH TERMINATION EXIT.	C10C201012
002450	005001		,STA	,SFLG	CLEAR LOOP FLAG.	C10C301013
002451	053226		,LDB	,SSKT		C10C401014
002452	022461		,IBR	,	SET LP TERMINATION EXIT	C10C501015
002453	005122		,IBR	,		C10C601016
002454	005122		,LDA	,0,2		C10C701017
002455	016000		,STA	,*+2		C10C801018
002456	052460		SJMP	,*		C10C901019
002457	001000		SSWT	,ENTR	SENSE SWITCH SUBRCLTINE ENTRANCE	C101001020
002460	002457 R		SJMP	,SSWP		C101101021
002461	000000		*			C101201022
002462	001000		*			C101301023
002463	002307 R		*			C101401024
			*			
			*			
			*			
			*			
			*			
002464	013054	INA1	,LDA	,STTY		C101501025
002465	006110		,CRAI	,0101200	ADJUST TTY DA	C101601026
002466	101200		,STA	,*+4		C101701027
002467	052473		,ADDI	,001300		C101801028
002470	006120		,STA	,*+8		C101901029
002471	001300		,SEN	,0,*+7	READ REGISTER READY	C102001030
002472	052502		,MERG	,011		C102101031
002473	101000		SJSJ*	,INPA	TERMINATE EXIT	C102201032
002474	002502 R		SJMP	,*+5		C102301033
002475	005011		,CIA	,0	INPUT CHARACTER	C102401034
002476	001400		,INR	,INPA		C102501035
002477	102506 R		,INR	,INPA		C102601036
002500	001000		SJMP*	,0	EXIT	C102701037
002501	002473 R		INPA	,BES		C102801038
002502	102500		SJMP	,INA1		C102901039

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002510	002464	R	*	*	INPUT CNE CHARACTER + PRINT FROM TTY TO A REGISTER	C103001040	
			*	*		C103101041	
002511	002000		INB1	.CALL	.INPA	INPUT CNE CHARACTER	C103201042
002512	002506	R		.JMP*	.INPB	TERMINATE EXIT	C103301043
002513	001000			.INR	.INPB		C103401044
002514	102522	R		.CALL	.OUTA	OUTPUT ONE CHARACTER	C103501045
002515	002000			.INR	.INPB		C103601046
002516	003021	R		.CALL	.OUTA		C103701047
002517	042522			.JMP*	.0	EXIT	C103801048
002520	042522			.INR	.INPB		C103901049
002521	001000			.INR	.INPB		C104001050
002522	100000			.JMP*	.0		C104101051
002522			INPB	.BES	.0		C104201052
002523	001000			.JMP	.INB1		C104301053
002524	002511	R	*	*	INPUT ONE CHARACTER (EDITED)		C104401054
			*	*			C104501055
002525	002000		INC3	.CALL	.INPB		C104601056
002526	002522	R		.JMP*	.INPC	TERMINATE EXIT	C104701057
002527	001000			.INR	.INPC		C104801058
002530	102554	R		.ERA1	.^v^	BACKSLASH	C104901059
002531	006130			.JAZ	.INC2	ABORT INPUT EXIT	C105001060
002532	000334			.ERA1	.^v^	RESTORE A	C105101061
002533	001010			.JAZ	.0337	BACKARROW	C105201062
002534	002551	R		.ERA1	.0337	DELETE ONE CHARACTER EXIT	C105301063
002535	006130			.JAZ	.INC1	RESTORE A	C105401064
002536	000334			.ERA1	.0337		C105501065
002537	006130			.JAZ	.INPC		C105601066
002540	000337			.INR	.INPC		C105701067
002541	001010			.INR	.INPC		
002542	002547	R		.INR	.INPC		
002543	006130			.INR	.INPC		
002544	000337			.INR	.INPC		
002545	042554			.INR	.INPC		
002546	042554			.INR	.INPC		
002547	042554		INC1	.INR	.INPC		
002550	042554			.INR	.INPC		
002551	042554		INC2	.INR	.INPC		
002552	042554			.INR	.INPC		

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002553	001000		,JMP*	,0	EXIT	C105801068
002554	100000					
002554		INPC	,BES	,0		C105901069
002555	001000		,JMP	,INC3		C106001070
002556	002525 R		*			
			*		INPUT ONE ALPHA CHARACTER FROM TTY KEYBOARD TO A REG	C106101071
			*			C106201072
002557	002000	IND4	,CALL	,INPC	INPUT CNE CHAR	C106401074
002560	002554 R		,JMP*	,INPD	TERMINATE EXIT	
002561	001000					C106501075
002562	102610 R		,JMP	,IND2	ABORT INPUT EXIT	
002563	001000		,JMP	,IND1	DELETE PREVIOUS CHARACTER EXIT	C106601076
002564	002605 R		,SUBI	,0301	CHAR A	
002565	001000		,JAN	,IND3	INVALID INPUT	C106901079
002566	002603 R		,SUBI	,032	CHAR Z	C107001080
002567	006140		,JAP	,IND3	INVALID INPUT	C107101081
002570	000301		,ADDI	,0333	RESTORE A	C107201082
002571	001004					
002572	002613 R					
002573	006140					
002574	000032					
002575	001002					
002576	002613 R					
002577	006120					
002600	000333					
002601	042610		,INR	,INPD	NORMAL EXIT	C107301083
002602	042610		,INR	,INPD		C107401084
002603	042610	IND1	,INR	,INPD	DELETE PREVIOUS CHARACTER EXIT	C107501085
002604	042610		,INR	,INPD		C107601086
002605	042610	IND2	,INR	,INPD	ABORT INPUT EXIT	C107701087
002606	042610		,INR	,INPD		C107801088
002607	001000		,JMP*	,0	EXIT	C107901089
002610	100000					
002610		INPC	,BES	,0		C108001090
002611	001000		,JMP	,IND4		C108101091
002612	002557 R					
002613	002000	IND3	,CALL	,OUTG	INVALID INPUT--PRINT MESSAGE	C108201092
002614	003153 R		,JMP	,INC2	ABORT	C108301093
002615	001000					
002616	002605 R		*			C108401094

			*			C10E501095
			*	INPUT TWO LETTER CHARACTERS FROM TTY		C10E601096
			*			C10E701097
002617	002000	INE3	CALL	INPD	INPUT ALPHA CHAR	C10E801098
002620	002610 R		JMP*	INPE	TERMINATE EXIT	C10E901099
002621	001000		JMP	INE2	ABORT INPUT EXIT	C109001100
002622	102651 R		JMP	INE1	DELETE PREVIOUS CHARACTER EXIT	C109101101
002623	001000		JMP	INE1		
002624	002646 R		JRLA	8		C109201102
002625	001000		STA	TSC2		C109301103
002626	002644 R		CALL	INPD	INPUT ALPHA CHAR	C109401104
002627	004250					
002630	053230					
002631	002000					
002632	002610 R					
002633	001000					
002634	102651 R					
002635	001000					
002636	002646 R					
002637	001000					
002640	002617 R					
002641	113230		CRA	TSC2		C109801108
002642	042651		INR	INPE	NORMAL EXIT	C109901109
002643	042651		INR	INPE		C110001110
002644	042651	INE1	INR	INPE	DELETE PREVIOUS CHARACTER EXIT	C110101111
002645	042651		INR	INPE		C110201112
002646	042651	INE2	INR	INPE	ABORT INPUT EXIT	C110301113
002647	042651		INR	INPE		C110401114
002650	001000		JMP*	0	EXIT	C110501115
002651	100000					
002651		INPE	BES	0		C110601116
002652	001000		JMP	INE3		C110701117
002653	002617 R					
		*				
		*	INPUT PERIOD,COMMA FOR MESSAGE TERMINATOR			
		*				
002654	002000	INF5	CALL	INPC	INPUT CNE CHARACTER	C111001121
002655	002554 R		JMP*	INPF	TERMINATE EXIT	C111201122
002656	001000		JMP	INF2	ABORT INPUT EXIT	C111301123
002657	102711 R					
002660	001000					
002661	002706 R					

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002662	001000	,JMP	,INF1	DELETE PREVIOUS CHARACTER EXIT	C111401124
002663	002704 R	,SUBI	,0254	COMMA	C111501125
002664	006140	,JAZ	,INF3	COMMA EXIT	C111601126
002665	000254	,SUBI	,02	PERIOD	C111701127
002666	001010	,JAZ	,INF4	PERIOD EXIT	C111801128
002667	002702 R	,CALL	,CUTG	PRINT INVALID MESSAGE	C111901129
002670	006140	,JMP	,INF2	ABORT	C112001130
002671	000002	,INR	,INPF	NORMAL EXIT	C112101131
002672	001010	,INR	,INPF	COMMA EXIT	C112201132
002673	002700 R	,INR	,INPF	COMMA EXIT	C112301133
002674	002000	,INR	,INPF	DELETE PREVIOUS CHARACTER EXIT	C112401134
002675	003153 R	,INR	,INPF	DELETE PREVIOUS CHARACTER EXIT	C112501135
002676	001000	,INR	,INPF	ABORT INPUT EXIT	C112601136
002677	002706 R	,INR	,INPF	ABORT INPUT EXIT	C112701137
002700	042711	INF4	,INR	EXIT	C112801138
002701	042711	INF3	,INR		C112901139
002702	042711	INF1	,INR		
002703	042711	INF2	,INR		
002704	042711	INR*	,0		
002705	042711	INP*	,BES		
002706	042711	INP*	,INPF		
002707	042711	INP*	,INPF		
002710	001000	INP*	,INPF		
002711	100000	INP*	,INPF		
002711	001000	INP*	,INPF		
002712	001000	INP*	,INPF		
002713	002654 R	*	*	INPUT OCTAL NUMBER FROM TTY KEYBOARD	C113001140
		*	*	ASSEMBLE AS 16 BIT NUMBER IN A REG	C113101141
		*	*	ONLY OCTAL NUMBERS ACCEPTED	C113201142
		*	*		C113301143
		*	*		C113401144
		*	*		C113501145
		*	*		C113601146
002714	005001	ING7	,TZA		C113701147
002715	053230	,STA	,TS02	TEMP STORAGE FOR OCTAL NUMBER	C113801148
002716	053232	,STA	,TS04	TEMP STORAGE FOR LIGIT COUNTER	C113901149
002717	063235	,STB	,TS07		C114001150
002720	005002	,TZA	,		C114101151
002721	002000	ING5	,CALL	INPUT ONE CHARACTER	C114201152
002722	002554 R	,JMP*	,INPG	TERMINATE EXIT	C114301153
002723	001000	,JMP*	,ING2	ABORT INPUT EXIT	C114401154
002724	102771 R	,JMP			
002725	001000	,JMP			

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002726	002764 R				
002727	001000	JMP	•ING1	DELETE PREVIOUS CHARACTER EXIT	C114501155
002730	003011 R				
002731	053233	STA	•TS05	SAVE INPUT	C114601156
002732	006140	SUBI	•0260		C114701157
002733	000260				
002734	001004	JAN	•ING6	INVALID IF NOT OCTAL NUMBER	C114801158
002735	002774 R	SUBI	•010		C114901159
002736	006140				
002737	000010	JAP	•ING6	INVALID IF NOT OCTAL NUMBER	C115001160
002740	001002	AEDI	•010	RESTORE DIGIT	C115101161
002741	002774 R				
002742	006120				
002743	000010	STA	•TS03	SAVE CHARACTER	C115201162
002744	053231	LDA	•TS02	INSERT CHARACTER	C115301163
002745	013230	LLRL	•3	INTO	C115401164
002746	004443	CRA	•TS03	OCTAL NUMBER	C115501165
002747	113231	JBZ	•**4	TOO MANY BITS ?	C115601166
002750	001020				
002751	002754 R	JMP	•ING8	YES	C115701167
002752	001000				
002753	003005 R	STA	•TS02	NO	C115801168
002754	053230	INR	•TS04	INCR # DIGITS	C115901169
002755	043232	JMP	•ING5	GET NEXT DIGIT	C116001170
002756	001000				
002757	002721 R	ING3	•INR	NORMAL EXIT	C116101171
002760	042771	ING4	•INR		C116201172
002761	042771	ING4	•INR	COMMA EXIT	C116301173
002762	042771	ING2	•INR		C116401174
002763	042771	ING2	•INR	ABORT INPUT EXIT	C116501175
002764	042771	ING1	•INR		C116601176
002765	042771	LDB	•TS07		C116701177
002766	023235	LDA	•TS02	GET ASSEMBLED OCTAL NUMBER	C116801178
002767	013230	JMP	•0	EXIT	C116901179
002770	001000				
002771	000000	INPG	•BES	•0	C117001180
002772	001000	JMP	•ING7		C117101181
002773	002714 R	ING6	LDA	GET LAST INPUT	C117201182
002774	013233	SUBI	•TS05	IS IT A COMMA	C117301183
002775	006140				
002776	000254				

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002777	001010	.JAZ	.ING4	YES	C117401184	
003000	002762 R	.SUBI	.02	IS IT A PERIOD	C117501185	
003001	006140					
003002	000002					
003003	001010	.JAZ	.ING3	YES	C117601186	
003004	002760 R					
003005	002000	ING8	.CALL	.OUTG	PRINT INVALID MESSAGE	C117701187
003006	003153 K					
003007	001000	.JMP	.ING2	ABORT	C117801188	
003010	002764 R					
	*				C117901189	
003011	013230	ING1	.LDA	.TS02	DELETE LAST CHARACTER	C118001190
003012	004343		.LGRA	.3		C118101191
003013	053230		.STA	.TS02		C118201192
003014	013232		.LDA	.TS04		C118301193
003015	005311		.DAR	.	REDUCE DIGIT COUNT	C118401194
003016	053232		.STA	.TS04		C118501195
003017	001000		.JMP	.ING5		C118601196
003020	002721 R					
	*				C118701197	
	*				C118801198	
	*				C118901199	
003021	000000	OUTA	.ENTR	.0		C119001200
003022	073227		.STX	.TS01	SAVE X	C119101201
003023	005014		.TAX	.		C119201202
003024	013054		.LDA	.STTY		C119301203
003025	006110		.GRAI	.0101100	ADJUST TTY DA	C119401204
003026	101100					
003027	053036		.STA	.**7		C119501205
003030	006120		.ADDI	.002000		C119601206
003031	002000					
003032	053050		.STA	.OUT1		C119701207
003033	005041		.TXA	.		C119801208
003034	006030		.LDXI	.0		C119901209
003035	000000					
003036	101000		.SEN	.0,OUT1	WRITE REGISTER READY	C120001210
003037	003050 R					
003040	005344		.DXR	.		C120101211
003041	001040		.JXZ	.**4		C120201212
003042	003045 R					
003043	001000		.JMP	.**-5		C120301213
003044	003036 R					

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003045	000077	.PLT	,077	C120401214	
003046	001000	.JMP	,*-10	C120501215	
003047	003034 R				
003050	103100	OUT1	,CAR ,0	C120601216	
003051	033227	.LDX	,TSC1	C120701217	
003052	001000	.JMP*	,OUTA	C120801218	
003053	103021 R				
		*		C120901219	
		*		C121001220	
003054	000001	STTY	,DATA ,01	C121101221	
		*		C121201222	
		*		C121301223	
		*		C121401224	
		*	CLTPUT TWO CHARACTERS FROM A REG TO TTY (HIGH ORDER FIRST)	C121501225	
		*	ENTER WITH CHARACTERS IN A REG	C121601226	
		*		C121701227	
003055	000000	OUTB	,ENTR ,0	C121801228	
003056	063234	.STB	,TS06	SAVE B	C121901229
003057	004550	.LLSR	,8		C122001230
003060	002000	.CALL	,OUTA	OUTPUT FIRST CHAR	C122101231
003061	003021 R	.LLRL	,8		C122201232
003062	004450	.CALL	,OUTA	OUTPUT SECOND CHAR	C122301233
003063	002000	.LDB	,TS06	RESTORE B	C122401234
003064	003021 R	.JMP*	,OUTB	RETURN	C122501235
003065	023234				
003066	001000				
003067	103055 R				
		*		C122601236	
		*	CLTPUT CARRIAGE RETURN AND LINE FEED TO TTY	C122701237	
		*		C122801238	
003070	000000	OUTC	,ENTR ,0	C122901239	
003071	006010	.LDIAI	,0106612	CR AND LF	C123001240
003072	106612	.CALL	,OUTB	OUTPUT 2 CHAR	C123101241
003073	002000	.JMP*	,OUTC	RETURN	C123201242
003074	003055 R				
003075	001000				
003076	103070 R				
		*		C123301243	
		*	CLTPUT OCTAL WORD AND A SPACE TO TTY	C123401244	
		*		C123501245	
003077	000000	OUTE	,ENTR ,0	C123601246	
003100	005002	.TZB	,	C123701247	

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003101	004557		•LLSR	•15	C123801248
003102	005122		•IBR	•	C123901249
003103	006110	OUT2	•GRAI	•'0•	C124001250
003104	000260				
003105	002000		•CALL	•OUTA	C124101251
003106	003021 R		•TZA	•	C124201252
003107	005001		•LLRL	•3	C124301253
003110	004443		•JBZ	•*+4	C124401254
003111	001020				
003112	003115 R		•JMP	•OUT2	C124501255
003113	001000		•LDIAI	•0240	C124601256
003114	003103 R				
003115	006010		•CALL	•OUTA	C124701257
003116	000240		•OUTA	ASCII BLANK CODE	
003117	002000				
003120	003021 R		•JMP*	•OUTE	C124801258
003121	001000				
003122	103077 R				
	*				C124901259
	*				C125001260
	*				C125101261
003123	000000	OUTD	•ENTR	•0	C125201262
003124	015000		•LEA	•0•1	C125301263
003125	001010		•JAZ*	•OUTD	C125401264
003126	103123 R		•CALL	•OUTB	C125501265
003127	002000				
003130	003055 R		•IXR	•	C125601266
003131	005144		•JMP	•OUTD+1	C125701267
003132	001000				
003133	003124 R				
	*				C125801268
	*				C125901269
	*				C126001270
003134	000000	OUTF	•ENTR	•0	C126101271
003135	053230		•STA	•TS02	C126201272
003136	006010		•LDIAI	•'1•	C126301273
003137	124240				
003140	002000		•CALL	•OUTB	C126401274
003141	003055 R				
003142	013230		•LEA	•TS02	C126501275
003143	002000		•JMPM	•OUTE	C126601276
003144	003077 R				

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003145	006010	•LDAI	•") •	RIGHT PARENTHESIS AND SPACE	C126701277	
003146	124640	•CALL	•OUTB		C126801278	
003147	002000					
003150	003055 R	•JMP*	•OUTF		C126901279	
003152	103134 R					
		*			C127001280	
		*	INVALID INPUT--PRINT MESSAGE		C127101281	
		*			C127201282	
003153	000000	OUTG	•ENTR	•0	C127301283	
003154	006030	•LDXI	•MSG5	INVALID MESSAGE	C127401284	
003155	002301 R	•CALL	•OUTD	OUTPUT MESSAGE	C127501285	
003156	002000					
003157	003123 R	•JMP*	•OUTG		C127601286	
003161	103153 R					
		*			C127701287	
		*	OUTPUT CONTROL CHARACTER SUBROUTINE		C127801288	
		*			C127901289	
003162	053203	OUT3	•STA	•OUTH+3	SAVE A	C128001290
003163	073204		•STX	•OUTH+4	SAVE X	C128101291
003164	033200	•LDX	•OUTH		A=CONTROL	C128201292
003165	015000	•LDA	•0•1		CHARACTER	C128301293
003166	002000	•CALL	•OUTA		OUTPUT CHARACTER	C128401294
003167	003021 R					
003170	006030	•LDXI	•077777	INIT	C128501295	
003171	077777	•CALL	•TDLY	TIME DELAY	C128601296	
003172	002000					
003173	003205 R	•INR	•OUTH	SET RETURN	C128701297	
003174	043200	•LDA	•OUTH+3	RESTORE A	C128801298	
003175	013203	•LDX	•OUTH+4	RESTORE X	C128901299	
003176	033204	•JMP	•0	RETURN	C129001300	
003200	000000	OUTF	•BES	•0	ENTRY	C129101301
003201	001000		•JMP	•OUT3	LOOP	C129201302
003202	003162 R		•BSS	•2	STORAGE FOR A + X	C129301303
003203						C129401304
		*	TIME DELAY SUBROUTINE			C129501305
		*				C129601306
003205	000000	TDLY	•ENTR	•0		C129701307

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003206	005344	*DXR	*		C129801308
003207	001040	*JXZ*	*TDLY	RETURN	C129901309
003210	103205 R				
003211	001000	*JMP	*--3		C13C001310
003212	003206 R				

* EXECUTIVE DATA TABLE

003213	000000	EAR1	*DATA	,0	PSEUDO A REG
003214	000000	EBC1	*DATA	,0	PSEUDO B REG
003215	000000	EXR1	*DATA	,0	PSEUDO X REG
003216		ETS1	*BSS	,6	TEMPORARY STORAGE
003224	000240	EK00	*DATA	,0240	ASCII BLANK(SPACE)
003225		SCON	*BSS	,1	MODE FLAG ,0 = CONSOLE ,1 = TTY
003226		SFLG	*BSS	,1	LOOP FLG USED IN SSWT

* DATA TABLE

003227	000000	TS01	*DATA	,0	TEMPORARY STORAGE
003230	000000	TS02	*DATA	,0	TEMPORARY STORAGE
003231	000000	TS03	*DATA	,0	TEMPORARY STORAGE
003232	000000	TS04	*DATA	,0	DIGIT COUNTER FOR INPG
003233	000000	TS05	*DATA	,0	TEMPORARY STORAGE
003234	000000	TS06	*DATA	,0	TEMPORARY STORAGE
003235	000000	TS07	*DATA	,0	TEMPORARY STORAGE

* PARITY ERRCR REPORTING ROUTINES

003236		IPER	*BSS	,0	INSTRUCTION PARITY ERRCR PROCESHER
003236	100545	*ExC	,0500+PRTY		DISABLE PARITY INTERRUPTS
003237	053272	*STA	*IPEA		SAVE A
003240	063273	*STB	*IPEB		B
003241	073274	*STX	*IPEX		AND X
003242	010100	*LDA	,0100		A=ERROR ADDRESS
003243	006020	*LDI	,0100		B=TRAP LOCATION
003244	000100				
003245	002000	*CALL	,SSWT		CALL SENSE SWITCH RUTINE
003246	002461 R				C133301343
003247	005000	*DATA	,05000		NOP
003250	103256 R	*DATA	,*(IPE1)*		ERR PRINTOUT

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003251	000265 R	*DATA	*TERM	SS3 EXIT	C133601346	
003252	003253 R	*DATA	*+1		C133701347	
003253	000020	*HLT	*020		C133801348	
003254	001000	*JMP	*TERM		C133901349	
003255	000265 R	*				
003256	000000	IPE1	*DATA	*0	C134001356	
003257	006030		*LDXI	*HG12	C134101351	
003260	003432 R				C134201352	
003261	002000		*CALL	*OUTD	C134301353	
003262	003123 R			OUTPUT ERR MESSAGE		
003263	010100		*LDA	*0100	C134401354	
003264	002000		*CALL	*OUTE	C134501355	
003265	003077 R			AND PARITY ERROR ADDRESS		
003266	002000		*CALL	*OUTC	C134601356	
003267	003070 R			CR/LF		
003270	001000		*JMP*	*IPE1	C134701357	
003271	103256 R					
003272	000000	IPEA	*DATA	*0	C134801358	
003273	000000	IPEB	*DATA	*0	C134901359	
003274	000000	IPEX	*DATA	*0	C135001360	
003275		*			C135101361	
003275	100545	APER	*BS8	*0	C135201362	
003276	053331		*EXC	*0500+PRTY	C135301363	
003277	063332		*STA	*APEA	C135401364	
003300	073333		*STB	*APEB	C135501365	
003301	010104		*STX	*APEX	C135601366	
003302	006020		*LDA	*0104	C135701367	
003303	000104		*LDBI	*0104	C135801368	
003304	002000			A=ERROR ADDRESS B=TRAP LOCATION		
003305	002461 R		*CALL	*SSWT	C135901369	
003306	005000			CALL SENSE SWITCH ROUTINE		
003307	103315 R		*DATA	*05000	NOP	C136001370
003310	000265 R		*DATA	*(APE1)*	ERR PRINTOUT	C136101371
003311	003312 R		*DATA	*TERM	SS3 EXIT	C136201372
003312	000021		*DATA	*+1		C136301373
003313	001000		*HLT	*021		C136401374
003314	000265 R		*JMP	*TERM		C136501375
003315	000000	*	APE1	*DATA	*0	C136601376
003316	006030			*LDXI	*HG13	C136701377
						C136801378

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003317	003452 R				
003320	002000	•CALL	•OUTD	OUTPUT ERR MESSAGE	C136901379
003321	003123 R				
003322	010104	•LDA	,0104		C137001380
003323	002000	•CALL	•OUTE	AND PARITY ERROR ADDRESS	C137101381
003324	003077 R				
003325	002000	•CALL	•OUTC	CR/LF	C137201382
003326	003070 R				
003327	001000	•JMP*	•APE1		C137301383
003330	103315 R				
003331	000000	APEA	•DATA	,0 REGISTER	C137401384
003332	000000	APEE	•DATA	,0 SAVE	C137501385
003333	000000	APEX	•DATA	,0 AREA	C137601386
003334		*			C137701387
003334	100545	OPER	•BSS	,0 OPERAND PARITY ERROR PROCESSOR	C137801388
003335	053370		•EXC	,0500+PRTY DISABLE PARITY INTERRUPTS	C137901389
003336	063371		•STA	•OPEA	C138001390
003337	073372		•STB	•OPEB	C138101391
003337	073372		•STX	•OPEX	C138201392
003340	010110		•LDA	,0110 A=ERROR ADDRESS	C138301393
003341	006020		•LD8I	,0110 B=TRAP LOCATION	C138401394
003342	000110				
003343	002000		•CALL	•SSWT CALL SENSE SWITCH ROUTINE	C138501395
003344	002461 R				
003345	005000		•DATA	,05000 NOP	C138601396
003346	103354 R		•DATA	,•(OPE1)* ERR PRINTOUT	C138701397
003347	000265 R		•DATA	,TERM SS3 EXIT	C138801398
003350	003351 R		•DATA	,**+1	C138901399
003351	000022		•HLT	,022	C139001400
003352	001000		•JMP	,TERM	C139101401
003353	000265 R	*			
003354	000000	OPE1	•DATA	,0	C139201402
003355	006030		•LDXI	,HG14	C139301403
003356	003470 R				L139401404
003357	002000		•CALL	•OUTD OUTPUT ERR MESSAGE	C139501405
003360	003123 R				
003361	010110		•LDA	,0110	C139601406
003362	002000		•CALL	•OUTE AND PARITY ERROR ADDRESS	C139701407
003363	003077 R				
003364	002000		•CALL	•OUTC CR/LF	C139801408
003365	003070 R				

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003366	001000		*JMP*	*CPE1	C139901409
003367	103354 R				
003370	000000	OPEA	*DATA	*0	REGISTER
003371	000000	OPEB	*DATA	*0	SAVE
003372	000000	OPEX	*DATA	*0	AREA
		*			
003373		TPER	*BSS	*0	TRAP PARITY ERROR PROCESSOR
003373	100545		*EXC	*0500+PRTY	DISABLE PARITY INTERRUPT
003374	053427		*STA	*TPEA	SAVE A
003375	063430		*STB	*TPEB	B
003376	073431		*STX	*TPEX	AND X
003377	010114		*LDA	*0114	A=ERROR ADDRESS
003400	006020		*LDI	*0114	B=TRAP LOCATION
003401	000114				
003402	002000		*CALL	*SSWT	CALL SENSE SWITCH ROUTINE
003403	002461 R				
003404	005000		*DATA	*05000	NOP
003405	103413 R		*DATA	*(TPE1)*	ERR PRINTOUT
003406	000265 R		*DATA	*TERM	SS3 EXIT
003407	003410 R		*DATA	*++1	
003410	000023		*HLT	*023	
003411	001000		*JMP	*TERM	
003412	000265 R		*		
003413	000000	TPE1	*DATA	*0	C141801428
003414	006030		*LDXI	*HG15	C141901429
003415	003506 R				C142001430
003416	002000		*CALL	*OUTD	OUTPUT ERR MESSAGE
003417	003123 R				C142101431
003420	010114		*LDA	*0114	C142201432
003421	002000		*CALL	*OUTE	AND PARITY ERROR ADDRESS
003422	003077 R				C142301433
003423	002000		*CALL	*OUTC	CR/LF
003424	003070 R				C142401434
003425	001000		*JMP*	*TPE1	
003426	103413 R				C142501435
003427	000000	TPEA	*DATA	*0	REGISTER
003430	000000	TPEB	*DATA	*0	SAVE
003431	000000	TPEX	*DATA	*0	AREA
		*****	*****	*****	*****
		*			
		*	MESSAGE TABLE		

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003432	106612	*	HG12	,DATA	,CRLF, 'INSTRUCTION PARITY ERROR AT ', 003433 144716 003434 151724 003435 151325 003436 141724 003437 144717 003440 147240 003441 150301 003442 151311 003443 152331 003444 120305 003445 151322 003446 147722 003447 120301 003450 152240 003451 000000 003452 106612	HG13	,DATA	,CRLF, 'ADDRESS PARITY ERROR AT ', 003453 140704 003454 142322 003455 142723 003456 151640 003457 150301 003460 151311 003461 152331 003462 120305 003463 151322 003464 147722 003465 120301 003466 152240 003467 000000 003470 106612	HG14	,DATA	,CRLF, 'OPERAND PARITY ERROR AT ', 003471 147720 003472 142722 003473 140716 003474 142240 003475 150301 003476 151311 003477 152331 003500 120305 003501 151322 003502 147722	C143201442 C143301443 C143401444 C143501445
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003503 120301
003504 152240
003505 000000
003506 106612
003507 152322
003510 140720
003511 120320
003512 140722
003513 144724
003514 154640
003515 142722
003516 151317
003517 151240
003520 140724
003521 120240
003522 000000
000007

HG15 ,DATA ,CRLF,TRAP PARITY ERROR AT P,0

C143601446

,END ,07

C143701447

LITERALS

POINTERS

SYMBOLS

1 003506 R HG15
1 003470 R HG14
1 003452 R HG13
1 003432 R HG12
1 003431 R TPEX
1 003430 R TPEB
1 003427 R TPEA
1 003413 R TPE1
1 003373 R TPER
1 003372 R OPEX
1 003371 R OPEB
1 003370 R OPEA
1 003354 R OPE1
1 003334 R OPER
1 003333 R APEX
1 003332 R APEB
1 003331 R APEA

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1	003315	R	APE1
1	003275	R	APER
1	003274	R	IPEX
1	003273	R	IPEB
1	003272	R	IPEA
1	003256	R	IPE1
1	003236	R	IPER
1	003235	R	TS07
1	003234	R	TS06
1	003233	R	TS05
1	003232	R	TS04
1	003231	R	TS03
1	003230	R	TS02
1	003227	R	TS01
1	003226	R	SFLG
1	003225	R	SCON
1	003224	R	EK00
1	003216	R	ETS1
1	003215	R	EXR1
1	003214	R	EBR1
1	003213	R	EAR1
1	003205	R	TDLY
1	003200	R	OUTH
1	003162	R	OUT3
1	003153	R	OUTG
1	003134	R	OUTF
1	003123	R	OUTD
1	003103	R	OUT2
1	003077	R	OUTE
1	003070	R	OUTC
1	003055	R	OUTB
1	003054	R	STTY
1	003050	R	OUT1
1	003021	R	OUTA
1	003011	R	ING1
1	003005	R	ING8
1	002774	R	ING6
1	002771	R	INPG
1	002764	R	ING2
1	002762	R	ING4
1	002760	R	ING3
1	002721	R	ING5

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1	002714	R	ING7
1	002711	R	INPF
1	002706	R	INF2
1	002704	R	INF1
1	002702	R	INF3
1	002700	R	INF4
1	002654	R	INF5
1	002651	R	INPE
1	002646	R	INE2
1	002644	R	INE1
1	002617	R	INE3
1	002613	R	IND3
1	002610	R	IND2
1	002605	R	IND1
1	002603	R	IND4
1	002557	R	INPC
1	002554	R	INC2
1	002551	R	INC1
1	002547	R	INC3
1	002522	R	INPB
1	002511	R	INB1
1	002506	R	INPA
1	002464	R	INA1
1	002461	R	SSWT
1	002450	R	SSWE
1	002445	R	SSWS
1	002433	R	SSWR
1	002417	R	SSW6
1	002410	R	SSW5
1	002403	R	SSWN
1	002377	R	SSW4
1	002364	R	SSW3
1	002351	R	SSWL
1	002347	R	SSW2
1	002342	R	SSW1
1	002307	R	SSWP
1	002301	R	MSG5
1	002272	R	MSG1
1	002266	R	EXIT
1	002234	R	ETBL
1	002214	R	ETO4

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1	002157	R	ETOF
1	002146	R	EBG2
1	002131	R	ECN2
1	002102	R	ECN3
1	002071	R	ECNG
1	002064	R	EDU4
1	002051	R	EDU2
1	002044	R	EDU1
1	002027	R	EDUM
1	002022	R	EG01
1	002007	R	EGOT
1	001761	R	EXRG
1	001733	R	EBRG
1	001704	R	EARG
1	001701	R	ETR2
1	001671	R	ETR1
1	001637	R	ETR3
1	001603	R	ETRP
1	001577	R	TBL1
1	001565	R	TBL
1	001562	R	TBLF
1	001556	R	TBLL
1	001550	R	TBLI
1	001533	R	HG11
1	001511	R	HG1C
1	001500	R	HDG9
1	001472	R	HDG8
1	001463	R	HDG6
0	001442	R	HDG5
0	001426	R	HDG3
1	001416	R	HDG1
1	106612		CRLF
1	001415	R	SAVX
1	001414	R	SAVE
1	001413	R	SWCH
1	001412	R	TERR
1	001411	R	PAT2
1	001410	R	PAT1
1	001407	R	BITS
1	001406	R	LAST
1	001405	R	FRST
1	001404	R	REP

1	001403	R	REP1
1	001402	R	MTYP
1	001401	R	TEST
1	001400	R	EMEM
1	001377	R	CYCL
1	001376	R	TCYC
1	001375	R	MTW2
1	001374	R	MTW1
1	001365	R	TES2
1	001341	R	TES1
1	001336	R	TES
1	001323	R	SET1
1	001321	R	SET
1	001317	R	DAP3
1	001304	R	DAP2
1	001273	R	DAP1
1	001263	R	DAP
1	001252	R	IWCC
1	001237	R	IWC
1	001221	R	TWCB
0	001216	R	TWCA
1	001200	R	TWCT
1	001137	R	TCBB
1	001133	R	TCB
1	001118	R	ICB2
1	001101	R	ICB1
1	001071	R	ICBC
1	001062	R	ICB
1	001044	R	TCBT
1	001030	R	IAO
1	001016	R	TAOT
1	001003	R	IAZ
1	000771	R	TAZT
1	000744	R	TUA1
1	000741	R	TUA
1	000731	R	IUA1
1	000727	R	IUA
1	000707	R	TUAC
1	000702	R	TUAB
1	000662	R	TUAA
1	000654	R	TUAT
1	000641	R	ELOP

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1	000622	R	ERP2
1	000362	R	ERP1
1	000345	R	ERPC
1	000333	R	ERR1
1	000322	R	MERR
1	000314	R	TERN
1	000265	R	TERM
1	000247	R	DEM
1	000234	R	MIN3
1	000210	R	MIN2
1	000203	R	MIN1
1	000177	R	MINT
1	000175	R	UACD
1	000170	R	UACA
1	000161	R	UACC
1	000140	R	UACB
1	000133	R	MTC4
1	000125	R	MTC1
1	000117	R	MTCM
1	000072	R	MTT6
1	000051	R	MTT5
1	000044	R	MTTM
1	000017	R	MTOP
1	000045		PRTY